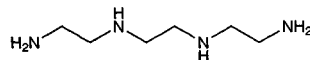


## REFERENCE

Kanetoshi,A.; Ogawa,H.; Katsura,E.; Kaneshima,H. Chlorination of Irgasan DP300 and formation of dioxins from its chlorinated derivatives, *J.Chromatogr.*, **1987**, 389, 139–153.

# Trientine



**Molecular formula:** C<sub>6</sub>H<sub>18</sub>N<sub>4</sub>

**Molecular weight:** 146.24

**CAS Registry No.:** 112-24-3, 38260-01-4 (HCl)

**Merck Index:** 9796

## SAMPLE

**Matrix:** blood

**Sample preparation:** Condition a Bond Elut SCX SPE cartridge with 5 mL water. 500 µL Plasma + 100 µL water + 1 mL MeCN, vortex briefly, centrifuge at 1000 g for 5 min. Add 1.2 mL of the supernatant to the SPE cartridge, wash with 3 mL water, wash with 2 mL 1 M KCl, wash with 3 mL 2 M KCl, elute with 1 mL 4 M KCl. Remove a 200 µL aliquot of the eluate and add it to 600 µL 100 mM pH 9.5 sodium phosphate buffer and 100 µL 0.15 mM trisodium EDTA in 100 mM pH 9.5 sodium phosphate buffer, mix, add 100 µL 10 mM fluorescamine in MeCN, vortex vigorously for 1 min, let stand for 20 min, add 50 µL 0.25 mM α-naphthylamine (Caution! α-Naphthylamine is a carcinogen!) in MeOH, inject a 20-50 µL aliquot.

## HPLC VARIABLES

**Column:** 250 × 4.6 5 µm Nucleosil 5-CN

**Mobile phase:** MeCN:buffer 27:73, pH adjusted to 6.0 with 2 M NaOH (Buffer was 140 mM ammonium chloride containing 48 mM sodium benzenesulfonate and 9.2 mM acetic acid.)

**Column temperature:** 40

**Flow rate:** 0.5

**Injection volume:** 20-50

**Detector:** F ex 380 em 485

## CHROMATOGRAM

**Retention time:** 9.5

**Internal standard:** α-naphthylamine (13)

**Limit of detection:** 100 ng/mL

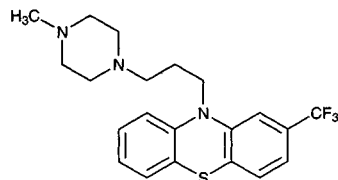
## KEY WORDS

plasma; derivatization; SPE; rat; human; pharmacokinetics

## REFERENCE

Miyazaki,K.; Kishino,S.; Kobayashi,M.; Arashima,S.; Matsumoto,S.; Arita,T. Determination of triethylenetetramine in plasma of patients by high-performance liquid chromatography, *Chem.Pharm.Bull.(Tokyo)*, **1990**, 38, 1035–1038.

# Trifluoperazine



**Molecular formula:** C<sub>21</sub>H<sub>24</sub>F<sub>3</sub>N<sub>3</sub>S

**Molecular weight:** 407.50

**CAS Registry No.:** 117-89-5, 440-17-5 (di HCl)

**Merck Index:** 9811

## SAMPLE

**Matrix:** blood

**Sample preparation:** 10 mL Plasma or whole blood + 1 mL 1 M NaOH, extract twice with 10 mL hexane for 30 min. Remove the organic layers and evaporate them to dryness under a stream of nitrogen, reconstitute the residue in 1 mL 100 mM HCl, add 5 mL chloroform, vortex for 1 min, centrifuge. Remove a 4.5 mL aliquot of the organic layer and evaporate it to dryness, reconstitute the residue in 100  $\mu$ L mobile phase, inject a 50  $\mu$ L aliquot.

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#### HPLC VARIABLES

**Column:** 10  $\mu$ m Micropak CN (Varian)

**Mobile phase:** MeCN:20 mM ammonium acetate 90:10

**Flow rate:** 2.5

**Injection volume:** 50

**Detector:** UV 254

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#### CHROMATOGRAM

**Retention time:** 9.3

**Limit of detection:** 10 ng/mL

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#### OTHER SUBSTANCES

**Extracted:** amitriptyline, butaperazine, carphenazine, chlorpromazine, fluphenazine, promazine, promethazine, trimeprazine

**Simultaneous:** acetophenazine, benztropine, haloperidol, imipramine, mesoridazine, nortriptyline, orphenadrine, piperacetazine, thiothixene, triflupromazine, trihexyphenidyl

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#### KEY WORDS

plasma; whole blood

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#### REFERENCE

Curry, S.H.; Brown, E.A.; Hu, O.Y.-P.; Perrin, J.H. Liquid chromatographic assay of phenothiazine, thioxanthene and butyrophenone neuroleptics and antihistamines in blood and plasma with conventional and radial compression columns and UV and electrochemical detection, *J.Chromatogr.*, **1982**, 231, 361–376.

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#### SAMPLE

**Matrix:** blood

**Sample preparation:** 1-5 mL Plasma + 1 mL 1 M NaOH + hexanes, extract for 30 min, centrifuge. Remove a 9 mL aliquot of the organic phase and evaporate it to dryness at 30° under a stream of nitrogen. Dissolve the residue in 100  $\mu$ L mobile phase, inject a 50  $\mu$ L aliquot.

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#### HPLC VARIABLES

**Column:** 10  $\mu$ m Micropak CN (Varian)

**Mobile phase:** MeCN:5 mM ammonium acetate 90:10

**Flow rate:** 2.5

**Injection volume:** 50

**Detector:** UV 254

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#### CHROMATOGRAM

**Retention time:** 20.1

**Limit of detection:** 10 ng/mL

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#### OTHER SUBSTANCES

**Simultaneous:** acetophenazine, amitriptyline, benztropine, butaperazine, carphenazine, fluphenazine, promethazine, haloperidol, imipramine, mesoridazine, nortriptyline, orphenadrine, piperacetazine, promazine, chlorpromazine, thiothixene, thioridazine, triflupromazine, trihexyphenidyl, trimeprazine, metabolites

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#### KEY WORDS

plasma

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#### REFERENCE

Curry, S.H.; Brown, E.A.; Hu, O.Y.-P.; Perrin, J.H. Liquid chromatographic assay of phenothiazine, thioxanthene and butyrophenone neuroleptics and antihistamines in blood and plasma with conventional and radial compression columns and UV and electrochemical detection, *J.Chromatogr.*, **1982**, 231, 361–376.

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**SAMPLE****Matrix:** blood**Sample preparation:** 1 mL Plasma + 100  $\mu$ L 50 mM HCl + 200  $\mu$ L concentrated ammonium hydroxide + 7 mL n-pentane:isopropanol 95:5, shake horizontally for 30 min, centrifuge at 2000 g. Remove the top organic layer and add it to 2 mL 100 mM perchloric acid, agitate for 10 min, centrifuge. Remove the aqueous layer and add it to 200  $\mu$ L concentrated ammonium hydroxide, add 6 mL n-pentane:isopropanol 95:5, agitate for 30 min, centrifuge. Remove the top organic layer and evaporate it to dryness under a stream of nitrogen at 45°, reconstitute the residue in 50  $\mu$ L MeCN, inject a 20-40  $\mu$ L aliquot. (Clean glassware scrupulously by soaking overnight in 50 mL/L Contrad (Curtin Matheson), rinse several times with water, and air dry.)

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**HPLC VARIABLES****Column:** 250  $\times$  4.6 5  $\mu$ m Ultrasphere cyano**Mobile phase:** MeCN:10 mM pH 2.5  $\text{KH}_2\text{PO}_4$  60:40**Flow rate:** 2.5**Injection volume:** 20-40**Detector:** E, Environmental Science Associates Coulochem Model 5100A, Model 5100 guard cell +0.85 V (between pump and injector), Model 5010 analytical cell +0.8 V, preanalytical cell +0.3 V

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**CHROMATOGRAM****Retention time:** 8.2**Internal standard:** trifluoperazine dihydrochloride

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**OTHER SUBSTANCES****Extracted:** thiothixene**Simultaneous:** amitriptyline, amoxapine, chlorpromazine, desipramine, doxepin, haloperidol, imipramine, loxapine, mesoridazine, nortriptyline, pheniramine, phenylephrine, prochlorperazine, promazine, promethazine, trazodone, trimeprazine, tripeleminamine**Noninterfering:** diazepam, diphenhydramine, ethopropazine, fluoxetine, nordiazepam, oxazepam, phenylpropanolamine, pseudoephedrine**Interfering:** fluphenazine, perphenazine, thioridazine, triflupromazine

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**KEY WORDS**

plasma; trifluoperazine is IS

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**REFERENCE**Hariharan,M.; VanNoord,T.; Kindt,E.K.; Tandon,R. A simple, sensitive liquid chromatographic assay of cis-thiothixene in plasma with coulometric detection, *Ther.Drug Monit.*, **1991**, *13*, 79-85.

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**SAMPLE****Matrix:** blood**Sample preparation:** 2 mL Whole blood or plasma + 2 mL buffer + 5 mL chloroform:isopropanol:n-heptane 60:14:26, shake gently horizontally for 10 min, centrifuge at 2800 g for 10 min. Remove the lower organic layer and evaporate it to dryness under vacuum at 45°, reconstitute the residue in 100  $\mu$ L mobile phase, centrifuge at 2800 g for 5 min, inject a 50  $\mu$ L aliquot of the supernatant. (Buffer was saturated ammonium chloride solution 25% diluted with water, adjusted to pH 9.5 with 25% ammonia solution.)

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**HPLC VARIABLES****Column:** 300  $\times$  3.9 4  $\mu$ m NovaPack C18**Mobile phase:** MeOH:THF:buffer 65:5:30 (Buffer was 0.68 g/L (10 mM (sic))  $\text{KH}_2\text{PO}_4$  adjusted to pH 2.6 with concentrated orthophosphoric acid.) (At the end of each session wash the column with water for 1 h and MeOH for 1 h, re-equilibrate for 30 min.)**Column temperature:** 30**Flow rate:** 0.8**Injection volume:** 50**Detector:** UV 260

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**CHROMATOGRAM****Retention time:** 19.78**Limit of detection:** <120 ng/mL

**KEY WORDS**

whole blood; plasma; interferences may occur—compounds (all of which are extracted) elute in this order tenoxicam; iproniazid; methocarbamol; methotrexate; caffeine; nialamide; colchicine; cytarabine; benzoyllecgonine; acetaminophen; diazoxide; dacarbazine; sulfinpyrazole; flumazenil; sulpride; morphine; atenolol; toloxatone; terbutaline; albuterol; phenobarbital; ranitidine; tiapride; phenol; chlormezanone; aspirin; metformin; ritodrine; codeine; sultopride; amisulpride; naltrexone; lisinopril; benzocaine; nizatidine; nalorphine; mephenesin; naloxone; sotalol; carteolol; procainamide; carbamazepine; bromazepam; nalbuphine; nadolol; procarbazine; dihydralazine; omeprazole; strychnine; acebutolol; glutethimide; chlorpropamide; glipizide; triazolam; prazosin; flunitrazepam; clonazepam; metoclopramide; melphalan; estazolam; tolbutamide; ephedrine; clonidine; pindolol; clobazam; minoxidil; disopyramide; nitrazepam; dextromethorphan; tofisopam; zopiclone; debrisoquine; sulindac; alprazolam; cycloguanil; lorazepam; methaqualone; ketamine; piroxicam; metoprolol; nifedipine; quinine; mephentermine; prilocaine; pentazocine; oxazepam; tiaprofenic acid; quinidine; celiprolol; ajmaline; yohimbine; lidocaine; secobarbital; viloxazine; mepivacaine; meperidine; doxylamine; labetalol; temazepam; amodiaquine; benperidol; droperidol; hydroxychloroquine; zolpidem; ketoprofen; alminoprofen; cicletanine; moclobemide; chloroquine; cocaine; timolol; nomifensine; ticlopidine; acenocoumarol; vandesine; mexiletine; dipyrindamole; trazodone; pipamperone; pyrimethamine; benazepril; vincristine; metapramine; chlordiazepoxide; oxprenolol; warfarin; clorazepate; flecainide; phenacyclidine; thiopental; fenfluramine; metipranolol; triprolidine; naproxen; buprenorphine; verapamil; buspirone; tianeptine; midazolam; bupivacaine; carbinoxamine; loprazolam; cetirizine; chlorpheniramine; moperone; cibenzoline; medifoxamine; astemizole; vinblastine; nicardipine; bisoprolol; diltiazem; glibornuride; reserpine; aconitine; nitrendipine; diazepam; mianserin; ramipril; haloperidol; tetracaine; alprenolol; aceprometazine; glibenclamide; chlorophenacinone; doxepin; nimodipine; diphenhydramine; cyclizine; histapyrrrodine; phenylbutazone; demexiptiline; clozapine; progualil; trifluperidol; medazepam; cyamemazine; bumadizone; suriclone; propranolol; acepromazine; dothiepin; dextromoramide; fenoprofen; dextropropoxyphene; loxapine; betaxolol; propafenone; promethazine; thioproperazine; methadone; amoxapine; quinupramine; opipramol; cyproheptadine; brompheniramine; mefenidramine; protriptyline; flurbiprofen; tetrazepam; zorubicin; prazepam; alimemazine; loperamide; imipramine; desipramine; levomepromazine; hydroxyzine; niflumic acid; penbutolol; fluvoxamine; pimozide; daunorubicin; indomethacin; maprotiline; tropatenine; etodolac; fluoxetine; amitriptyline; nortriptyline; tiocloamarol; diclofenac; mefloquine; trimipramine; chlorambucil; lidoflazine; ibuprofen; floctafenine; alpidem; loratadine; chlorpromazine; clomipramine; carpipramine; thioridazine; fentiazac; clemastine; mefenamic acid; fluphenazine; prochlorperazine; penfluridol; bepridil; terfenadine; trifluoperazine

**REFERENCE**

Tracqui, A.; Kintz, P.; Mangin, P. Systematic toxicological analysis using HPLC/DAD, *J. Forensic Sci.*, **1995**, *40*, 254–262.

**SAMPLE**

**Matrix:** blood, urine

**Sample preparation:** Add 1 mL whole blood or urine to Toxi-Tube A (Toxi-Lab, Irvine CA), add 3 mL water, mix by gentle inversion for 5 min, centrifuge at 1500 g for 5 min. Remove the organic layer and evaporate it to dryness under a stream of nitrogen at 40°, reconstitute the residue with 50  $\mu$ L MeCN:water 50:50, vortex for 10 s, centrifuge at 7500 g for 2 min, inject a 10 (urine) or 30 (blood)  $\mu$ L aliquot. (The detector wavelength shown is the wavelength of maximum absorbance. This will not necessarily be the optimal wavelength for the separation. Multiple wavelengths from 200–350 nm can be scanned using a diode-array detector. Otherwise, 220 nm may be a reasonable choice for initial work. Matrix may interfere.)

**HPLC VARIABLES**

**Guard column:** 20 mm long Symmetry C18

**Column:** 250  $\times$  4.6 5  $\mu$ m Symmetry C8 (Waters)

**Mobile phase:** Gradient. A was 50 mM pH 3.8 sodium phosphate buffer. B was MeCN. A:B 85:15 for 6.5 min, 65:35 for 18.5 min, 20:80 for 3 min (step gradient), re-equilibrate at initial conditions for 7 min.

**Column temperature:** 30

**Flow rate:** 1 for 6.5 min, to 1.5 over 18.5 min, maintain at 1.5 for 3 min (re-equilibrate at 1.5 mL/min)

**Injection volume:** 10–30

**Detector:** UV 258.2

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**CHROMATOGRAM****Retention time:** 17.747

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**KEY WORDS**whole blood

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**REFERENCE**

Gaillard,Y.; Pépin,G. Use of high-performance liquid chromatography with photodiode-array UV detection for the creation of a 600-compound library. Application to forensic toxicology, *J.Chromatogr.A*, **1997**, 763, 149–163.

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**SAMPLE****Matrix:** formulations

**Sample preparation:** Add 5 mL water to powdered tablets containing 4 mg trifluoperazine, heat on a water-bath for 3 min. Cool, add 50 mL water, shake for 15 min and make up to 100 mL with MeOH. Filter, remove a 5 mL aliquot, add IS to a concentration of 3 µg/mL, make up to 50 mL with mobile phase, inject an aliquot.

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**HPLC VARIABLES****Column:** 150 × 3.9 Novapak-phenyl-4**Mobile phase:** MeOH:15 mM pH 6.5 sodium acetate buffer 81:19**Flow rate:** 1.2**Injection volume:** 10**Detector:** UV 254

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**CHROMATOGRAM****Retention time:** 5.5**Internal standard:** alprenolol (3.4)**Limit of detection:** 150 pg

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**OTHER SUBSTANCES****Simultaneous:** degradation products, triflupromazine

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**KEY WORDS**tablets

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**REFERENCE**

Al-Obaid,A.M.; Hagga,M.E.M.; El-Khawad,I.E.; El-Mahi,O.H.M. Simultaneous quantitation of some phenothiazine drug substances and their monosulphoxide degradates by high performance liquid chromatography (HPLC), *J.Liq.Chromatogr.Rel.Technol.*, **1996**, 19, 1369–1389.

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**SAMPLE****Matrix:** formulations

**Sample preparation:** Crush tablet or capsule, to 2 mg amitriptyline add 20 mL MeOH, shake 30 min, centrifuge at 2000 rpm for 5 min, to 5 mL supernatant add 4 mL 1.25 mg/mL norephedrine.HCl in MeOH, dilute to 10 mL with MeOH.

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**HPLC VARIABLES****Column:** 150 × 4.6 5 µm Zorbax CN**Mobile phase:** MeCN:MeOH:25 mM pH 4.8 sodium acetate-acetic acid buffer 35:45:20**Flow rate:** 2.5**Injection volume:** 10**Detector:** UV 254

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**CHROMATOGRAM****Retention time:** 5.4**Internal standard:** norephedrine (2.7)

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**OTHER SUBSTANCES****Also analyzed:** chlorpromazine, amitriptyline, imipramine, thioridazine

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**KEY WORDS**

tablets; capsules

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**REFERENCE**

Lovering,E.G.; Beaulieu,N.; Lawrence,R.C.; Sears,R.W. Liquid chromatographic method for identity, assay, and content uniformity of five tricyclic drugs, *J.Assoc.Off.Anal.Chem.*, **1985**, 68, 168–171.

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**SAMPLE****Matrix:** formulations**Sample preparation:** Measure out syrup or injection, make up to 50 mL with MeOH, mix, inject a 10  $\mu$ L aliquot.

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**HPLC VARIABLES****Column:** 150  $\times$  4.6 5  $\mu$ m Zorbax CN**Mobile phase:** MeCN:MeOH:25 mM pH 4.5 acetate buffer 40:30:30**Flow rate:** 2.5**Injection volume:** 10**Detector:** UV 229

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**CHROMATOGRAM****Retention time:** 6**Internal standard:** trifluoperazine

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**OTHER SUBSTANCES****Simultaneous:** perphenazine

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**KEY WORDS**

syrup; injections; trifluoperazine is IS

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**REFERENCE**

Beaulieu,N.; Lovering,E.G. Liquid chromatographic method for perphenazine and its sulfoxide in pharmaceutical dosage forms for determination of stability, *J.Assoc.Off.Anal.Chem.*, **1986**, 69, 167–169.

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**SAMPLE****Matrix:** formulations**Sample preparation:** Inject a 20  $\mu$ L aliquot.

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**HPLC VARIABLES****Column:** 250  $\times$  4 Zorbax ODS**Mobile phase:** MeOH containing 0.5 g/L sodium acetate**Column temperature:** 35**Flow rate:** 1.5**Injection volume:** 20**Detector:** UV 228

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**CHROMATOGRAM****Retention time:** 4.30

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**OTHER SUBSTANCES****Simultaneous:** chlorpromazine, trihexyphenidyl

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**REFERENCE**

Pradas,T.N.V.; Sivakumar,M. HPLC quantification of a tricomponent psychiatric formulation containing chlorpromazine, trifluoperazine and trihexyphenidyl, *Pharmazie*, **1992**, 47, 231–231.

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**SAMPLE****Matrix:** solutions**Sample preparation:** Prepare a solution in mobile phase, inject a 20  $\mu$ L aliquot.

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**HPLC VARIABLES**

**Column:** 100 × 3 5 µm Lichrosorb SI60

**Mobile phase:** MeCN:MeOH:ammonium hydroxide 250:55:13

**Flow rate:** 1.2

**Injection volume:** 20

**Detector:** UV 240

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**CHROMATOGRAM**

**Retention time:** 3.1

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**OTHER SUBSTANCES**

**Simultaneous:** N-acetylprocainamide, amitriptyline, butaperazine, chlorimipramine, chlorpromazine, codeine, desipramine, dimethacrine, diphenhydramine, disopyramide, doxepin, hydroquinidine, maprotiline, melitracene, mesoridazine, nortriptyline, perazine, perphenazine, procainamide, prochlorperazine, prothipendyl, protriptyline, quinidine, thiethylperazine, thioperazine

**Noninterfering:** acenocoumaron, acetaminophen, acetophenetidine, aspirin, benzodiazepines, bibenzepin, butriptyline, caffeine, chlorprothixene, clopenthixol, clothiapine, dixyrazine, droperidol, fluphenazine, haloperidol, hydroxyzine, isoniazid, methotrimeprazine, metopimazine, moperone, noxiptyline, orphenadrine, pericyazine, phenprocoumon, pipothiazine, promethazine, salicylic acid, theophylline, thiopropazate, trimeprazine, trimipramine

**Interfering:** imipramine, opipramol, pipamperone, promazine, thioridazine, thiothixene

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**REFERENCE**

Edelbroek,P.M.; de Haas,E.J.M.; de Wolff,F.A. Liquid-chromatographic determination of amitriptyline and its metabolites in serum, with adsorption onto glass minimized, *Clin.Chem.*, **1982**, 28, 2143-2148.

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**SAMPLE**

**Matrix:** solutions

**Sample preparation:** Prepare a solution in mobile phase, inject a 50 µL aliquot.

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**HPLC VARIABLES**

**Column:** 300 × 4 10 µm µBondapak CN

**Mobile phase:** MeCN:MeOH:5 mM phosphate buffer 60:15:25, adjusted to pH 7.0

**Flow rate:** 2

**Injection volume:** 50

**Detector:** UV 254

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**CHROMATOGRAM**

**Retention time:** k' 4.96

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**OTHER SUBSTANCES**

**Simultaneous:** acetaminophen, amitriptyline, caffeine, chlordiazepoxide, chlorpromazine, desipramine, desmethyldoxepin, diazepam, disopyramide, doxepin, imipramine, maprotiline, methaqualone, nortriptyline, procainamide, propoxyphene, propranolol, protriptyline, salicylic acid, theophylline, thioridazine

**Interfering:** trimipramine

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**REFERENCE**

Koteel,P.; Mullins,R.E.; Gadsden,R.H. Sample preparation and liquid-chromatographic analysis for tricyclic antidepressants in serum, *Clin.Chem.*, **1982**, 28, 462-466.

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**SAMPLE**

**Matrix:** solutions

**Sample preparation:** Prepare a solution in mobile phase, inject 75-100 µL aliquot.

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**HPLC VARIABLES**

**Column:** 250 × 4.6 5 µm Supelco

**Mobile phase:** EtOH:MeCN:t-butylamine 98:2:0.05 (Prepared from 1 gal EtOH + 77 mL MeCN + 1.9 mL t-butylamine.)

**Flow rate:** 2

**Injection volume:** 75-100

**Detector:** UV 254

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## CHROMATOGRAM

**Retention time:** 6.0

**Internal standard:** promazine (5.2)

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## OTHER SUBSTANCES

**Simultaneous:** N-acetylprocainamide, amitriptyline, amoxapine, amphetamine, buprion, chlor-diazepoxide, chlorimipramine, chlorpheniramine, chlorpromazine, cocaine, demoxepam, desipramine, desmethylchlordiazepoxide, desmethyldoxepin, dextropropoxyphene, diazepam, disopyramide, doxepin, fluphenazine, hydroxyamoxapine (7- and 8-), 2-hydroxydesipramine, 2-hydroxyimipramine, 10-hydroxynortriptyline, iminostilbene, imipramine, iprindole, loxepin, maprotiline, meperidine, methadone, mianserin, nortriptyline, norzimeldine, oxapam, oxaprotiline, perphenazine, phentermine, procainamide, prochlorperazine, prolixin, promethazine, propoxyphene, protriptyline, pyrilamine, quinidine, thioridazine, triflupromazine, trimeprazine, trimipramine

**Noninterfering:** thiopropazine

**Interfering:** codeine, desmethyldisopyramide, morphine, zimeldine

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## KEY WORDS

normal phase

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## REFERENCE

Beierle, F.A.; Hubbard, R.W. Liquid chromatographic separation of antidepressant drugs: I. Tricyclics, *Ther. Drug Monit.*, **1983**, *5*, 279-292.

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## SAMPLE

**Matrix:** solutions

**Sample preparation:** Prepare a 10 µg/mL solution in MeOH, inject a 20 µL aliquot.

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## HPLC VARIABLES

**Column:** 125 × 4.9 Spherisorb S5W silica

**Mobile phase:** MeOH containing 10 mM ammonium perchlorate and 1 mL/L 100 mM NaOH in MeOH, pH 6.7

**Flow rate:** 2

**Injection volume:** 20

**Detector:** E, LeCarbone, V25 glassy carbon electrode, + 1.2 V

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## CHROMATOGRAM

**Retention time:** 3.7

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## OTHER SUBSTANCES

**Also analyzed:** acebutolol, acepromazine, acetophenazine, N-acetylprocainamide, albuterol, al-prenolol, amethocaine, amiodarone, amitriptyline, antazoline, atenolol, azacyclonal, bamethan, benactyzine, benperidol, benzethidine, benzocaine, benzocetamine, benzphetamine, benzquinamide, bromhexine, bromodiphenhydramine, bromperidol, brompheniramine, brompromazine, buclizine, bufotenine, bupivacaine, buprenorphine, butacaine, butethamate, chlorcyclizine, chlorpheniramine, chlorphenoxamine, chlorprenaline, chlorpromazine, chlorprothixene, cimetidine, cinchonidine, cinnarizine, clemastine, clomipramine, clonidine, cocaine, cyclazocine, cyclozine, cyclopentamine, cyproheptadine, deserpidine, desipramine, dextromoramide, dextropropoxyphene, dicyclomine, diethylcarbamazepine, diethylpropion, diethylthiambutene, dihydroergotamine, dimethindene, dimethothiazine, diphenhydramine, diphenoxylate, dipiprone, diprenorphine, dipyrindamole, disopyramide, dothiepin, doxapram, doxepin, doxylamine, droperidol, ephedrine, ergocornine, ergocristine, ergocristinine, ergocryptine, ergometrine, ergosine, ergosinine, ergotamine, ethiopropazine, etorphine, etoxeridine, fenethazine, fenfluramine, fenoterol, fentanyl, flavoxate, fluopromazine, flupenthixol, fluphenazine, flurazepam, haloperidol, hydroxyzine, hyoscine, ibogaine, imipramine, indapamine, iprindole, isothipendyl, isoxsuprine, ketanserine, laudanosine, lidocaine, lofepramine, loxapine, maprotiline, mecamlamine, meclorphenoxate, meclozine, medazepam, mephentermine, mepivacaine, meptazinol, mepyramine, mesoridazine, metaraminol, methadone, methamphetamine, methapyrilene, methdilazene, methotrimeprazine, methoxamine, methoxyphenamine, methoxypropazine,



methylephedrine, methylergonovine, methysergide, metoclopramide, metopimazine, metoprolol, mianserin, morazone, nadolol, nalorphine, naloxone, naphazoline, nicotine, nifedipine, nomifensine, nortriptyline, noscapine, orphenadrine, oxeladin, oxprenolol, oxymetazolin, papaverine, pargyline, pecazine, penbutolol, pentazocine, penthienate, pericyazine, perphenazine, phenadoxone, phenampromide, phenazocine, phenbutrazate, phendimetrazine, phenelzine, phenglutarimide, phenindamine, pheniramine, phenmetrazine, phenomorphan, phenoperidine, phenothiazine, phenoxybenzamine, phentolamine, phenylephrine, phenyltoloxamine, physostigmine, piminodine, pimozide, pindolol, pipamazine, pipazethate, piperacetazine, piperidolate, pipradol, pirenzepine, piritramide, pizotifen, practolol, pramoxine, prazosin, prenylamine, prilocaine, primaquine, proadifen, procainamide, procaine, prochlorperazine, procyclidine, proheptazine, prolintane, promazine, promethazine, pronethalol, properidine, propiomazine, propranolol, prothipendyl, protriptyline, proxymetacaine, pseudoephedrine, pyrimethamine, quinidine, quinine, ranitidine, rescinnamine, sotalol, tacrine, terazosin, terbutaline, terfenadine, thenyldiamine, theophylline, thiethylperazine, thiopropazate, thioproperazine, thioridazine, thiothixene, thonzylamine, timolol, tocainide, tolpropamine, tolycaine, tranlycypromine, trazodone, trifluoperidol, trimeperidine, trimetrazine, trimethobenzamide, trimethoprim, trimipramine, tripelethnamine, triprolidine, tryptamine, verapamil, xylometazoline

## REFERENCE

Jane, I.; McKinnon, A.; Flanagan, R. J. High-performance liquid chromatographic analysis of basic drugs on silica columns using non-aqueous ionic eluents. II. Application of UV, fluorescence and electrochemical oxidation detection, *J. Chromatogr.*, **1985**, *323*, 191-225.

## SAMPLE

**Matrix:** solutions

**Sample preparation:** Prepare a solution in mobile phase, inject a 40  $\mu$ L aliquot.

## HPLC VARIABLES

**Guard column:** Pelliguard LC-CN (Supelco)

**Column:** 150  $\times$  4.6 5  $\mu$ m Supelcosil LC-PCN

**Mobile phase:** MeCN:MeOH:10 mM pH 7.0 phosphate buffer 58:14:28

**Flow rate:** 1.2

**Injection volume:** 40

**Detector:** UV 254

## CHROMATOGRAM

**Retention time:** 5.6

**Internal standard:** N-propionylprocainamide (6)

## OTHER SUBSTANCES

**Simultaneous:** amitriptyline, atropine, butalbital, chlorpromazine, desipramine, desmethylmaprotiline, doxepin, imipramine, maprotiline, methadone, norpropoxyphene, nortriptyline, phenylpropanolamine, procainamide, prochlorperazine, promethazine, propranolol, protriptyline, trimipramine

**Noninterfering:** acetaminophen, allopurinol, amikacin, amoxapine, amytal, bretylium, caffeine, carbamazepine, carisoprodol, chloramphenicol, chlordiazepoxide, chlorpropamide, clonazepam, codeine, diazepam, disopyramide, droperidol, ethinamate, ethosuximide, fluphenazine, flurazepam, furosemide, gentamicin, haloperidol, hydrochlorothiazide, hydroxyzine, ibuprofen, kanamycin, lidocaine, loxapine, meperidine, mephobarbital, meprobamate, methaqualone, methotrexate, morphine, nafcillin, naloxone, neomycin, perphenazine, phenacetin, phenobarbital, phenytoin, prazepam, primidone, procaine, propoxyphene, reserpine, salicylamide, salicylic acid, secobarbital, spironolactone, theophylline, thiopental, thioridazine, tobramycin, valproic acid, verapamil

**Interfering:** quinidine, trimeprazine

## REFERENCE

Lin, W.-N.; Frade, P. D. Simultaneous quantitation of eight tricyclic antidepressants in serum by high-performance liquid chromatography, *Ther. Drug Monit.*, **1987**, *9*, 448-455.

## SAMPLE

**Matrix:** solutions

**Sample preparation:** Prepare a solution in mobile phase, inject a 65  $\mu$ L aliquot.

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**HPLC VARIABLES**

**Column:** 150 × 4.6 5 µm Spherisorb S5W

**Mobile phase:** MeOH:50 mM pH 9.9 ammonium acetate buffer 85:15

**Flow rate:** 1.4

**Injection volume:** 65

**Detector:** UV 261

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**CHROMATOGRAM**

**Retention time:** 3.5

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**OTHER SUBSTANCES**

**Simultaneous:** amitriptyline, carbamazepine, chlorprothixene, clomipramine, clozapine, imipramine, levomepromazine, mianserine, nortriptyline, perphenazine, zuclopenthixol

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**REFERENCE**

Olesen, O.V.; Poulsen, B. On-line fully automated determination of clozapine and desmethylclozapine in human serum by solid-phase extraction on exchangeable cartridges and liquid chromatography using a methanol buffer mobile phase on unmodified silica, *J.Chromatogr.*, **1993**, 622, 39–46.

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**SAMPLE**

**Matrix:** solutions

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**HPLC VARIABLES**

**Guard column:** 30 × 2.1 Spheri-5 RP-8

**Column:** 220 × 2.1 Spheri-5 RP-8

**Mobile phase:** Gradient. A was 0.08% diethylamine and 0.09% phosphoric acid in water, pH 2.3.

B was MeCN:water 90:10 containing 0.08% diethylamine and 0.09% phosphoric acid. A:B 95:5 for 2 min, to 0:100 over 15 min (?), maintain at 0:100 for 5 min.

**Column temperature:** 50

**Flow rate:** 0.5

**Detector:** UV 200

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**CHROMATOGRAM**

**Retention time:** 15.8

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**OTHER SUBSTANCES**

**Simultaneous:** mesoridazine, promazine, thiothixene, chlorpromazine, thioridazine

**Also analyzed:** amitriptyline, amphetamine, chlordiazepoxide, desalkylflurazepam, desipramine, desmethyldoxepin, diazepam, diethylpropion, doxepin, ephedrine, fenfluramine, flurazepam, imipramine, methamphetamine, norchlordiazepoxide, nordiazepam, nortriptyline, oxazepam, phentermine, phenylpropanolamine, prazepam

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**REFERENCE**

*Rainin Catalog, C1-94*, **1994**, p. 7.24.

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**SAMPLE**

**Matrix:** solutions

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**HPLC VARIABLES**

**Column:** 250 × 4.6 Zorbax RX

**Mobile phase:** Gradient. A was 10 mL concentrated orthophosphoric acid and 7 mL triethylamine in 1 L water. B was 10 mL concentrated orthophosphoric acid and 7 mL triethylamine in 200 mL water, make up to 1 L with MeCN. A:B from 100:0 to 0:100 over 30 min, maintain at 0:100 for 5 min.

**Column temperature:** 30

**Flow rate:** 2

**Detector:** UV 210

**OTHER SUBSTANCES**

**Also analyzed:** acepromazine, acetaminophen, acetophenazine, albuterol, aminophylline, amitrityline, amobarbital, amoxapine, amphetamine, amylocaine, antipyrine, aprobarbital, aspirin, atenolol, atropine, avermectin, barbital, benzocaine, benzoic acid, benzotropine, benzphetamine, berberine, bibucaine, bromazepam, brompheniramine, buprenorphine, buspirone, butabarbital, butacaine, butethal, caffeine, carbamazepine, carbromal, chloramphenicol, chlor-diazepoxide, chloroquine, chlorothiazide, chloroxylenol, chlorphenesin, chlorpheniramine, chlorpromazine, chlorpropamide, chlortetracycline, cimetidine, cinchonidine, cinchonine, clenbuterol, clonazepam, clonixin, clorazepate, cocaine, codeine, colchicine, cortisone, coumarin, cyclazocine, cyclobenzaprine, cyclothiazide, cyheptamide, cymarin, danazol, danthron, dapsone, debrisoquine, desipramine, dexamethasone, dextromethorphan, dextropropoxyphene, diamorphine, diazepam, diclofenac, diethylpropion, diethylstilbestrol, diflunisal, digitoxin, digoxin, diltiazem, diphenhydramine, diphenoxylate, diprenorphine, dipyrone, disulfiram, dopamine, doxapram, doxepin, dronabinol, ephedrine, epinephrine, epinine, estradiol, estriol, estrone, ethacrynic acid, ethosuximide, etonitazene, etorphine, eugenol, famotidine, fenbendazole, fencamfamine, fenpropofen, fenproporex, fentanyl, flubendazole, flufenamic acid, flunitrazepam, 5-fluorouracil, fluoxymesterone, fluphenazine, flurosemide, gentisic acid, gitoxigenin, glipizide, glunixin, glutethimide, glybenclamide, guaiaicol, halazepam, haloperidol, hydrochlorothiazide, hydrocodone, hydrocortisone, hydromorphone, hydroxyquinoline, ibogaine, ibuprofen, iminostilbene, imipramine, indomethacin, isocarboxystyryl, isocarboxazid, isoniazid, isoproterenol, isoxsuprine, ivermectin, ketamine, ketoprofen, kynurenic acid, levorphanol, lidocaine, lorazepam, lormetazepam, loxapine, mazindol, mebendazole, meclizine, meclofenamic acid, medazepam, mefenamic acid, megestrol, mepacrine, meperidine, mephentermine, mephenytoin, mephesin, mephobarbital, mepivacaine, mescaline, mesoridazine, methadone, methamphetamine, methapyrilene, methaqualone, methazolamide, methocarbamol, methoxamine, methsuximide, methyl salicylate, methylodopa, methylodopamine, methylphenidate, methylprednisolone, methyltestosterone, methyprylon, metoprolol, mibolerone, morphine, nadolol, nalorphine, naloxone, naltrexone, naphazoline, naproxen, nefopam, niacinamide, nicotine, niacin, nifedipine, niflumic acid, nitrazepam, norepinephrine, nortriptyline, noscapine, nyldrin, oxazepam, oxycodone, oxymorphone, oxyphenbutazone, oxytetracycline, papaverine, pargyline, pemoline, pentazocine, pentobarbital, persantine, phenacetin, phenazocine, phenazopyridine, phencyclidine, phendimetrazine, phenelzine, pheniramine, phenobarbital, phenothiazine, phensuximide, phentermine, phenylbutazone, phenylephrine, phenylpropanolamine, piperocaine, prazepam, prednisolone, primidone, probenecid, progesterone, propiomazine, propranolol, propylparaben, pseudoephedrine, puromycin, pyrilamine, pyridylidone, quazepam, quinaldic acid, quinidine, quinine, ranitidine, recinnamine, reserpine, resorcinol, saccharin, albuterol, salicylamide, salicylic acid, scopolamine, scopoletin, secobarbital, strychnine, sulfacetamide, sufadiazine, sulfadimethoxine, sulfaethidole, sulfamerazine, sulfamethazine, sulfamethoxazole, sulfanilamide, sulfapyridine, sulfasoxazole, sulindac, tamoxifen, temazepam, testosterone, tetracaine, tetracycline, tetramisole, thebaine, theobromine, theophylline, thiabendazole, thiamine, thiamylal, thiobarbituric acid, thioridazine, thiosalicylic acid, thiothixene, thymol, tolazamide, tolazoline, tobutamide, tolmetin, tranlycypromine, triamcinolone, tribenzylamine, trihexyphenidyl, trimethoprim, tripeleminamine, triprolidine, tropacocaine, tyramine, verapamil, vincamine, warfarin, yohimbine, zoxazolamine

**REFERENCE**

Hill,D.W.; Kind,A.J. Reversed-phase solvent gradient HPLC retention indexes of drugs, *J.Anal.Toxicol.*, **1994**, *18*, 233-242.

**SAMPLE**

**Matrix:** solutions

**HPLC VARIABLES**

**Column:** 250 × 4.5 µm LiChrospher 100 RP-8

**Mobile phase:** MeCN:0.025% phosphoric acid:buffer 60:25:15 (Buffer was 9 mL concentrated phosphoric acid and 10 mL triethylamine in 900 mL water, adjust pH to 3.4 with dilute phosphoric acid, make up to 1 L.)

**Flow rate:** 0.6

**Injection volume:** 25

**Detector:** UV 229

**CHROMATOGRAM**

**Retention time:** 9.32

## OTHER SUBSTANCES

**Also analyzed:** acebutolol, acepromazine, acetaminophen, acetazolamide, acetophenazine, albuterol, alprazolam, amitriptyline, amobarbital, amoxapine, antipyrine, atenolol, atropine, azatadine, baclofen, benzocaine, bromocriptine, brompheniramine, brotizolam, bupivacaine, buspirone, butabarbital, butalbital, caffeine, carbamazepine, cetirizine, chlorcyclizine, chlordi-azepoxide, chlormezanone, chloroquine, chlorpheniramine, chlorpromazine, chlorpropamide, chlorprothixene, chlorthalidone, chlorzoxazone, cimetidine, cisapride, clomipramine, clonazepam, clonidine, clozapine, cocaine, codeine, colchicine, cyclizine, cyclobenzaprine, dantrolene, desipramine, diazepam, diclofenac, diflunisal, diltiazem, diphenhydramine, diphenidol, diphenoxylate, dipyrindamole, disopyramide, dobutamine, doxapram, doxepin, droperidol, encainide, ethidium bromide, ethopropazine, fenoprofen, fentanyl, flavoxate, fluoxetine, fluphenazine, flurazepam, flurbiprofen, fluvoxamine, furosemide, glutethimide, glyburide, guaifenesin, haloperidol, homatropine, hydralazine, hydrochlorothiazide, hydrocodone, hydromorphone, hydroxy-chloroquine, hydroxyzine, ibuprofen, imipramine, indomethacin, ketoconazole, ketoprofen, ketorolac, labetalol, levorphanol, lidocaine, loratadine, lorazepam, lovastatin, loxapine, mazin-dol, mefenamic acid, meperidine, mephénytoin, mepivacaine, mesoridazine, metaproterenol, metformin, methadone, methdilazine, methocarbamol, methotrexate, methotrimeprazine, methoxamine, methyl dopa, methylphenidate, metoclopramide, metolazone, metoprolol, met-ronidazole, midazolam, moclobemide, morphine, nadolol, nalbuphine, naloxone, naphazoline, naproxen, nifedipine, nizatidine, norepinephrine, nortriptyline, oxazepam, oxycodone, oxymet-azoline, paroxetine, pemoline, pentazocine, pentobarbital, pentoxifylline, perphenazine, phen-iramine, phenobarbital, phenol, phenolphthalein, phentolamine, phenylbutazone, phenyltolox-amine, phenytoin, pimozide, pindolol, piroxicam, pramoxine, prazepam, prazosin, probenecid, procainamide, procaine, prochlorperazine, procyclidine, promazine, promethazine, propafenone, propantheline, propiomazine, propofol, propranolol, protriptyline, quazepam, quinidine, quini-ne, racemethorphan, ranitidine, remoxipride, risperidone, salicylic acid, scopolamine, seco-barbital, sertraline, sotalol, spironolactone, sulfapyrazone, sulindac, temazepam, terbutaline, terfenadine, tetracaine, theophylline, thiethylperazine, thiopental, thioridazine, thiothixene, timolol, tocainide, tolbutamide, tolmetin, trazodone, triamterene, triazolam, triflupromazine, trimeprazine, trimethoprim, trimipramine, verapamil, warfarin, xylometazoline, yohimbine, zopiclone

## KEY WORDS

details of plasma extraction

## REFERENCE

Koves, E.M. Use of high-performance liquid chromatography-diode array detection in forensic toxicology, *J. Chromatogr. A*, **1995**, 692, 103–119.

# Trifluperidol

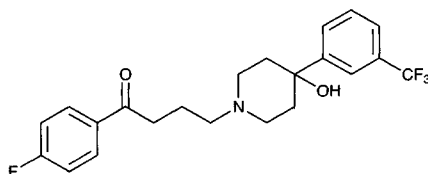
**Molecular formula:** C<sub>22</sub>H<sub>23</sub>F<sub>4</sub>NO<sub>2</sub>

**Molecular weight:** 409.42

**CAS Registry No.:** 749-13-3, 2062-77-3 (HCl)

**Merck Index:** 9813

**Lednicer No.:** 1 306



## SAMPLE

**Matrix:** blood

**Sample preparation:** 2 mL Whole blood or plasma + 2 mL buffer + 5 mL chloroform:isopropanol: n-heptane 60:14:26, shake gently horizontally for 10 min, centrifuge at 2800 g for 10 min. Remove the lower organic layer and evaporate it to dryness under vacuum at 45°, reconstitute the residue in 100 µL mobile phase, centrifuge at 2800 g for 5 min, inject a 50 µL aliquot of the supernatant. (Buffer was saturated ammonium chloride solution 25% diluted with water, adjusted to pH 9.5 with 25% ammonia solution.)

## HPLC VARIABLES

**Column:** 300 × 3.9 4 µm NovaPack C18

**Mobile phase:** MeOH:THF:buffer 65:5:30 (Buffer was 0.68 g/L (10 mM (sic))  $\text{KH}_2\text{PO}_4$  adjusted to pH 2.6 with concentrated orthophosphoric acid.) (At the end of each session wash the column with water for 1 h and MeOH for 1 h, re-equilibrate for 30 min.)

**Column temperature:** 30

**Flow rate:** 0.8

**Injection volume:** 50

**Detector:** UV 247

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## CHROMATOGRAM

**Retention time:** 6.61

**Limit of detection:** <120 ng/mL

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## KEY WORDS

whole blood; plasma; interferences may occur—compounds (all of which are extracted) elute in this order tenoxicam; iproniazid; methocarbamol; methotrexate; caffeine; nialamide; colchicine; cytarabine; benzoylcegonine; acetaminophen; diazoxide; dacarbazine; sulfinpyrazole; flumazenil; sulpride; morphine; atenolol; toloxatone; terbutaline; albuterol; phenobarbital; ranitidine; tiapride; phenol; chlormezanone; aspirin; metformin; ritodrine; codeine; sultopride; amisulpride; naltrexone; lisinopril; benzocaine; nizatidine; nalorphine; mephenesin; naloxone; sotalol; carteolol; procainamide; carbamazepine; bromazepam; nalbuphine; nadolol; procarbazine; dihydralazine; omeprazole; strychnine; acebutolol; glutethimide; chlorpropamide; glipizide; triazolam; prazosin; flunitrazepam; clonazepam; metoclopramide; melphalan; estazolam; tolbutamide; ephedrine; clonidine; pindolol; clobazam; minoxidil; disopyramide; nitrazepam; dextromethorphan; tofisopam; zopiclone; debrisoquine; sulindac; alprazolam; cycloguanil; lorazepam; methaqualone; ketamine; piroxicam; metoprolol; nifedipine; quinine; mephentermine; prilocaine; pentazocine; oxazepam; tiaprofenic acid; quinidine; celiprolol; ajmaline; yohimbine; lidocaine; secobarbital; viloxazine; mepivacaine; meperidine; doxylamine; labetalol; temazepam; amodiaquine; benperidol; droperidol; hydroxychloroquine; zolpidem; ketoprofen; alminoprofen; cicletanine; moclobemide; chloroquine; cocaine; timolol; nomifensine; ticlopidine; acenocoumarol; vandesine; mexiletine; dipyridamole; trazodone; pipamperone; pyrimethamine; benazepril; vincristine; metapramine; chlordiazepoxide; oxprenolol; warfarin; clorazepate; flecainide; phencyclidine; thiopental; fenfluramine; metipranolol; triprolidine; naproxen; buprenorphine; verapamil; buspirone; tianeptine; midazolam; bupivacaine; carbinoxamine; loprazolam; cetirizine; chlorpheniramine; moperone; cibenzoline; medifoxamine; astemizole; vinblastine; nocardipine; bisoprolol; diltiazem; glibornuride; reserpine; aconitine; nitrendipine; diazepam; mianserin; ramipril; haloperidol; tetracaine; alprenolol; aceprometazine; glibenclamide; chlorophenacinone; doxepin; nimodipine; diphenhydramine; cyclizine; histapyrrrodine; phenylbutazone; demexiptiline; clozapine; proguanil; trifluoperidol; medazepam; cyamemazine; bumadizone; suriclone; propranolol; acepromazine; dothiepin; dextromoramide; fenopropfen; dextropropoxyphene; loxapine; betaxolol; propafenone; promethazine; thiopropazine; methadone; amoxapine; quinupramine; opipramol; cyproheptadine; brompheniramine; mefenidramine; protriptyline; flurbiprofen; tetrazepam; zorubicin; prazepam; alimemazine; loperamide; imipramine; desipramine; levomepromazine; hydroxyzine; niflumic acid; penbutolol; fluvoxamine; pimozide; daunorubicin; indomethacin; maprotiline; tropatenine; etodolac; fluoxetine; amitriptyline; nortriptyline; tiocloamarol; diclofenac; mefloquine; trimipramine; chlorambucil; lidoflazine; ibuprofen; floctafenine; alpidem; loratadine; chlorpromazine; clomipramine; carpipramine; thioridazine; fentiazac; clemastine; mefenamic acid; fluphenazine; prochlorperazine; penfluridol; bepridil; terfenadine; trifluoperazine

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## REFERENCE

Tracqui, A.; Kintz, P.; Mangin, P. Systematic toxicological analysis using HPLC/DAD, *J. Forensic Sci.*, **1995**, *40*, 254–262.

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## SAMPLE

**Matrix:** blood, urine

**Sample preparation:** Add 1 mL whole blood or urine to Toxi-Tube A (Toxi-Lab, Irvine CA), add 3 mL water, mix by gentle inversion for 5 min, centrifuge at 1500 g for 5 min. Remove the organic layer and evaporate it to dryness under a stream of nitrogen at 40°, reconstitute the residue with 50  $\mu\text{L}$  MeCN:water 50:50, vortex for 10 s, centrifuge at 7500 g for 2 min, inject a 10 (urine) or 30 (blood)  $\mu\text{L}$  aliquot. (The detector wavelength shown is the wavelength of maximum absorbance. This will not necessarily be the optimal wavelength for the separation. Multiple wavelengths from 200–350 nm can be scanned using a diode-array detector. Otherwise, 220 nm may be a reasonable choice for initial work. Matrix may interfere.)

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**HPLC VARIABLES****Guard column:** 20 mm long Symmetry C18**Column:** 250 × 4.6 5 µm Symmetry C8 (Waters)**Mobile phase:** Gradient. A was 50 mM pH 3.8 sodium phosphate buffer. B was MeCN. A:B 85:15 for 6.5 min, 65:35 for 18.5 min, 20:80 for 3 min (step gradient), re-equilibrate at initial conditions for 7 min.**Column temperature:** 30**Flow rate:** 1 for 6.5 min, to 1.5 over 18.5 min, maintain at 1.5 for 3 min (re-equilibrate at 1.5 mL/min)**Injection volume:** 10-30**Detector:** UV 200.5

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**CHROMATOGRAM****Retention time:** 21.638

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**KEY WORDS**whole blood

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**REFERENCE**

Gaillard, Y.; Pépin, G. Use of high-performance liquid chromatography with photodiode-array UV detection for the creation of a 600-compound library. Application to forensic toxicology, *J. Chromatogr. A*, **1997**, 763, 149–163.

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**SAMPLE****Matrix:** solutions**Sample preparation:** Prepare a 10 µg/mL solution in MeOH, inject a 20 µL aliquot.

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**HPLC VARIABLES****Column:** 125 × 4.9 Spherisorb S5W silica**Mobile phase:** MeOH containing 10 mM ammonium perchlorate and 1 mL/L 100 mM NaOH in MeOH, pH 6.7**Flow rate:** 2**Injection volume:** 20**Detector:** E, LeCarbone, V25 glassy carbon electrode, + 1.2 V

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**CHROMATOGRAM****Retention time:** 2.0

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**OTHER SUBSTANCES**

**Also analyzed:** acebutolol, acepromazine, acetophenazine, N-acetylprocainamide, albuterol, alprenolol, amethocaine, amiodarone, amitriptyline, antazoline, atenolol, azacyclonal, bamethan, benactyzine, benperidol, benzethidine, benzocaine, benzocetamine, benzphetamine, benzquinamide, bromhexine, bromodiphenhydramine, bromperidol, brompheniramine, brompromazine, buclizine, buprenorphine, bupivacaine, buprenorphine, butacaine, butethamate, chlorcyclizine, chlorpheniramine, chlorphenoxamine, chlorprenaline, chlorpromazine, chlorprothixene, cimetidine, cinchonidine, cinnarizine, clemastine, clomipramine, clonidine, cocaine, cyclazocine, cyclizine, cyclopentamine, cyproheptadine, deserpidine, desipramine, dextromoramide, dextropropoxyphene, dicyclomine, diethylcarbamazine, diethylpropion, diethylthiambutene, dihydroergotamine, dimethindene, dimethothiazine, diphenhydramine, diphenoxylate, dipipranone, diprenorphine, dipyrindamole, disopyramide, dothiepin, doxapram, doxepin, doxylamine, droperidol, ephedrine, ergocornine, ergocristine, ergocristinine, ergocryptine, ergometrine, ergosine, ergosinine, ergotamine, ethopropazine, etorphine, etoxeridine, fenethazine, fenfluramine, fenoterol, fentanyl, flavoxate, flupromazine, flupenthixol, fluphenazine, flurazepam, haloperidol, hydroxyzine, hyoscine, ibogaine, imipramine, indapamine, iprindole, isothipendyl, isoxsuprine, ketanserine, laudanosine, lidocaine, lofepramine, loxapine, maprotiline, mecamlamine, meclorphenoxate, meclozine, medazepam, mephentermine, mepivacaine, meptazinol, mepyramine, mesoridazine, metaraminol, methadone, methamphetamine, methapyrilene, methdilazene, methotrimeprazine, methoxamine, methoxyphenamine, methoxypropazine, methylephedrine, methylergonovine, methysergide, metoclopramide, metopimazine, metoprolol, mianserin, morazone, nadolol, nalorphine, naloxone, naphazoline, nicotine, nifedipine, nomifensine, nortriptyline, noscapine, orphenadrine, oxeladin, oxprenolol, oxymetazolin, papaverine, pargyline, pecazine, penbutolol, pentazocine, penthienate, pericyazine, perphenazine,

phenadoxone, phenampromide, phenazocine, phenbutrazate, phendimetrazine, phenelzine, phenglutarimide, phenindamine, pheniramine, phenmetrazine, phenomorphan, phenoperidine, phenothiazine, phenoxybenzamine, phentolamine, phenylephrine, phenyltoloxamine, physostigmine, piminodine, pimozone, pindolol, pipamazine, pipazethate, piperacetazine, piperidolate, pipradol, pirenzepine, piritramide, pizotifen, practolol, pramoxine, prazosin, prenylamine, prilocaine, primaquine, proadifen, procainamide, procaine, prochlorperazine, procyclidine, proheptazine, prolintane, promazine, promethazine, pronethalol, properidine, propiomazine, propranolol, prothipendyl, protriptyline, proxymetacaine, pseudoephedrine, pyrimethamine, quinidine, quinine, ranitidine, rescinnamine, sotalol, tacrine, terazosin, terbutaline, terfenadine, thenyldiamine, theophylline, thiethylperazine, thiopropazate, thioproperazine, thioridazine, thiothixene, thonzylamine, timolol, tocainide, tolpropamine, tolycaine, tranlycypromine, trazodone, trifluoperazine, trimeperidine, trimeprazine, trimethobenzamide, trimethoprim, trimipramine, tripelennamine, triprolidine, tryptamine, verapamil, xylometazoline

## REFERENCE

Jane, I.; McKinnon, A.; Flanagan, R.J. High-performance liquid chromatographic analysis of basic drugs on silica columns using non-aqueous ionic eluents. II. Application of UV, fluorescence and electrochemical oxidation detection, *J. Chromatogr.*, **1985**, 323, 191–225.

# Triflupromazine

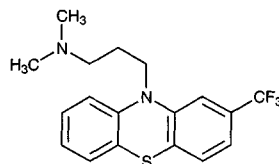
**Molecular formula:** C<sub>18</sub>H<sub>19</sub>F<sub>3</sub>N<sub>2</sub>S

**Molecular weight:** 352.42

**CAS Registry No.:** 146-54-3, 1098-60-8 (HCl)

**Merck Index:** 9814

**Lednicer No.:** 1 380



## SAMPLE

**Matrix:** blood

**Sample preparation:** 10 mL Plasma or whole blood + 1 mL 1 M NaOH, extract twice with 10 mL hexane for 30 min. Remove the organic layers and evaporate them to dryness under a stream of nitrogen, reconstitute the residue in 1 mL 100 mM HCl, add 5 mL chloroform, vortex for 1 min, centrifuge. Remove a 4.5 mL aliquot of the organic layer and evaporate it to dryness, reconstitute the residue in 100  $\mu$ L mobile phase, inject a 50  $\mu$ L aliquot. (It is implied, but not explicitly stated in the paper, that this extraction procedure works for this compound.)

## HPLC VARIABLES

**Column:** 10  $\mu$ m Micropak CN (Varian)

**Mobile phase:** MeCN:20 mM ammonium acetate 90:10

**Flow rate:** 2.5

**Injection volume:** 50

**Detector:** UV 254

## CHROMATOGRAM

**Retention time:** 6.6

**Limit of detection:** 10 ng/mL

## OTHER SUBSTANCES

**Simultaneous:** acetophenazine, amitriptyline, benztropine, butaperazine, chlorpromazine, fluphenazine, haloperidol, imipramine, mesoridazine, nortriptyline, orphenadrine, piperacetazine, promazine, promethazine, thioridazine, thiothixene, trifluoperazine, trihexyphenidyl

**Interfering:** carphenazine, trimeprazine

## KEY WORDS

plasma; whole blood

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**REFERENCE**

Curry, S.H.; Brown, E.A.; Hu, O.Y.-P.; Perrin, J.H. Liquid chromatographic assay of phenothiazine, thioxanthene and butyrophenone neuroleptics and antihistamines in blood and plasma with conventional and radial compression columns and UV and electrochemical detection, *J.Chromatogr.*, **1982**, *231*, 361–376.

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**SAMPLE**

**Matrix:** blood

**Sample preparation:** Condition a 1 mL 100 mg Phenomenex C2 SPE cartridge (cat. no. AHO-0857) with 1 mL MeOH then 1 mL water (add analyte within 2-3 min). 500  $\mu$ L Serum + 300  $\mu$ L 2 M pH 4.5 sodium acetate, vortex for 5-10 s, add to SPE cartridge, wash with 1 mL water, 1 mL MeOH:water 1:1, 1 mL MeCN:water 1:1, elute with 500  $\mu$ L mobile phase, inject a 50  $\mu$ L aliquot.

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**HPLC VARIABLES**

**Guard column:** 20  $\times$  2 Vydac C18 reverse phase (cat. no. 201SC)

**Column:** 150  $\times$  4.6 5  $\mu$ m UltraCarb 5 octadecylsilyl (cat. no. OOF-0351-EO)

**Mobile phase:** 875 mL MeOH:MeCN 1:1 + 125 mL 30 mM pH 4.0 ammonium acetate

**Column temperature:** 40

**Flow rate:** 1.5

**Injection volume:** 50

**Detector:** UV 242

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**CHROMATOGRAM**

**Retention time:** 2.2

**Internal standard:** triflupromazine

**Limit of quantitation:** 160 ng/mL

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**OTHER SUBSTANCES**

**Simultaneous:** amiodarone

**Noninterfering:** acetaminophen, N-acetylprocainamide, amikacin, amitriptyline, caffeine, carbamazepine, chloramphenicol, clonazepam, cyclosporine, desipramine, digoxin, disopyramide, ethosuximide, flecainide, gentamicin, haloperidol, imipramine, kanamycin, lidocaine, methotrexate, netilmicin, nortriptyline, phenobarbital, phenytoin, primidone, procainamide, propranolol, propoxyphene, quinidine, salicylic acid, streptomycin, theophylline, tobramycin, valproic acid, vancomycin

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**KEY WORDS**

serum; SPE; triflupromazine is IS

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**REFERENCE**

Jandreski, M.A.; Vanderslice, W.E. Clinical measurement of serum amiodarone and desethylamiodarone by using solid-phase extraction followed by HPLC with a high-carbon reversed-phase column, *Clin.Chem.*, **1993**, *39*, 496–500.

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**SAMPLE**

**Matrix:** formulations

**Sample preparation:** Add 5 mL water to powdered tablets containing 4 mg triflupromazine, heat on a water-bath for 3 min. Cool, add 50 mL water, shake for 15 min and make up to 100 mL with MeOH. Filter, remove a 5 mL aliquot, add IS to a concentration of 3  $\mu$ g/mL, make up to 50 mL with mobile phase, inject an aliquot.

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**HPLC VARIABLES**

**Column:** 150  $\times$  3.9 Novapak-phenyl-4

**Mobile phase:** MeOH:15 mM pH 6.5 sodium acetate buffer 81:19

**Flow rate:** 1.2

**Injection volume:** 10

**Detector:** UV 254

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**CHROMATOGRAM**

**Retention time:** 6.1

**Internal standard:** alprenolol (3.2)

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**Limit of detection:** 100 pg

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#### OTHER SUBSTANCES

**Simultaneous:** degradation products, trifluperazine

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#### KEY WORDS

tablets

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#### REFERENCE

Al-Obaid,A.M.; Hagga,M.E.M.; El-Khawad,I.E.; El-Mahi,O.H.M. Simultaneous quantitation of some phenothiazine drug substances and their monosulphoxide degrades by high performance liquid chromatography (HPLC), *J.Liq.Chromatogr.Rel.Technol.*, **1996**, 19, 1369–1389.

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#### SAMPLE

**Matrix:** solutions

**Sample preparation:** Add 50  $\mu$ L of a solution in ethyl acetate to 25  $\mu$ L trichloroethyl chloroformate, vortex, heat at 120° for 20 min, cool. Evaporate to dryness under a stream of air at 40°, reconstitute the residue in 100  $\mu$ L MeOH, inject a 50  $\mu$ L aliquot.

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#### HPLC VARIABLES

**Column:** 300  $\times$  4 MCH-10 reversed-phase (Varian)

**Mobile phase:** MeOH:water 84:16

**Flow rate:** 2

**Injection volume:** 50

**Detector:** UV 254

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#### CHROMATOGRAM

**Retention time:** 6

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#### OTHER SUBSTANCES

**Simultaneous:** chlorpromazine, chlorprothixene, phenothiazine, phenothiazine-5-oxide, promazine, promethazine, trimeprazine

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#### KEY WORDS

derivatization

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#### REFERENCE

Wallace,J.E.; Shimek,E.L.,Jr.; Harris,S.C.; Stavchansky,S. Determination of promethazine in serum by liquid chromatography, *Clin.Chem.*, **1981**, 27, 253–255.

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#### SAMPLE

**Matrix:** solutions

**Sample preparation:** Prepare a solution in mobile phase, inject 75-100  $\mu$ L aliquot.

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#### HPLC VARIABLES

**Column:** 250  $\times$  4.6 5  $\mu$ m Supelco

**Mobile phase:** EtOH:MeCN:t-butylamine 98:2:0.05 (Prepared from 1 gal EtOH + 77 mL MeCN + 1.9 mL t-butylamine.)

**Flow rate:** 2

**Injection volume:** 75-100

**Detector:** UV 254

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#### CHROMATOGRAM

**Retention time:** 3.0

**Internal standard:** promazine (5.2)

**OTHER SUBSTANCES**

**Simultaneous:** N-acetylprocainamide, amoxapine, amphetamine, buprion, chlordiazepoxide, chlorpheniramine, chlorpromazine, cocaine, codeine, demoxepam, desipramine, desmethylchlordiazepoxide, desmethyldisopyramide, desmethyldoxepin, dextropropoxyphene, diazepam, disopyramide, doxepin, hydroxyamoxapine (7- and 8-), 2-hydroxydesipramine, 2-hydroxyimipramine, 10-hydroxynortriptyline, iminostilbene, imipramine, iprindole, maprotiline, meperidine, mianserin, morphine, nortriptyline, norzimeldine, oxapam, oxaprotiline, procainamide, prochlorperazine, prolixin, promethazine, propoxyphene, protriptyline, pyrilamine, quinidine, thioridazine, trifluoperazine, trimeprazine, trimipramine, zimeldine

**Noninterfering:** thiopropazine

**Interfering:** amitriptyline, chlorimipramine, fluphenazine, loxepin, methadone, perphenazine, phentermine

**KEY WORDS**

normal phase

**REFERENCE**

Beierle, F.A.; Hubbard, R.W. Liquid chromatographic separation of antidepressant drugs: I. Tricyclics, *Ther. Drug Monit.*, **1983**, *5*, 279–292.

**SAMPLE**

**Matrix:** solutions

**Sample preparation:** Prepare a 10 µg/mL solution in MeOH, inject a 20 µL aliquot.

**HPLC VARIABLES**

**Column:** 125 × 4.9 Spherisorb S5W silica

**Mobile phase:** MeOH containing 10 mM ammonium perchlorate and 1 mL/L 100 mM NaOH in MeOH, pH 6.7

**Flow rate:** 2

**Injection volume:** 20

**Detector:** E, LeCarbone, V25 glassy carbon electrode, + 1.2 V

**CHROMATOGRAM**

**Retention time:** 3.6

**OTHER SUBSTANCES**

**Also analyzed:** acebutolol, acepromazine, acetophenazine, N-acetylprocainamide, albuterol, alprenolol, amethocaine, amiodarone, amitriptyline, antazoline, atenolol, azacyclonal, bamethan, benactyzine, benperidol, benzethidine, benzocaine, benzocetamine, benzphetamine, benzquinamide, bromhexine, bromodiphenhydramine, bromperidol, brompheniramine, brompromazine, buclizine, buprenorphine, bupivacaine, buprenorphine, butacaine, butethamate, chlorcyclizine, chlorpheniramine, chlorphenoxamine, chlorprenaline, chlorpromazine, chlorprothixene, cimetidine, cinchonidine, cinnarizine, clemastine, clomipramine, clonidine, cocaine, cyclazocine, cyclizine, cyclopentamine, cyproheptadine, deserpidine, desipramine, dextromoramide, dextropropoxyphene, dicyclomine, diethylcarbamazine, diethylpropion, diethylthiambutene, dihydroergotamine, dimethindene, dimethothiazine, diphenhydramine, diphenoxylate, dipiprone, diprenorphine, dipyrindamole, disopyramide, dothiepin, doxapram, doxepin, doxylamine, droperidol, ephedrine, ergocornine, ergocristine, ergocristinine, ergocryptine, ergometrine, ergosine, ergosinine, ergotamine, ethopropazine, etorphine, etoxeridine, fenethazine, fenfluramine, fenoterol, fentanyl, flavoxate, flupenthixol, fluphenazine, flurazepam, haloperidol, hydroxyzine, hyoscine, ibogaine, imipramine, indapamine, iprindole, isothipendyl, isoxsuprine, ketanserine, laudanose, lidocaine, lofepramine, loxapine, maprotiline, mecamlamine, meclophenoxate, meclozine, medazepam, mephentermine, mepivacaine, meptazinol, mepyramine, mesoridazine, metaraminol, methadone, methamphetamine, methapyrilene, methdilazene, methotrimeprazine, methoxamine, methoxyphenamine, methoxypropazine, methylephedrine, methylergonovine, methysergide, metoclopramide, metopimazine, metoprolol, mianserin, morazone, nadolol, nalorphine, naloxone, naphazoline, nicotine, nifedipine, nomifensine, nortriptyline, noscapine, orphenadrine, oxeladin, oxprenolol, oxymetazolin, papaverine, pargyline, pecazine, penbutolol, pentazocine, penthienate, pericyazine, perphenazine, phenadoxone, phenampramide, phenazocine, phenbutrazate, phendimetrazine, phenelzine, phenglutarimide, phenindamine, pheniramine, phenmetrazine, phenomorphan, phenoperidine, phenothiazine, phenoxybenzamine, phentolamine, phenylephrine, phenyltoloxamine, physostigmine, pimindine, pimizide, pindolol, pipamazine, pipazethate, piperacetazine, piperidolate, pipradol, pi-

renzepine, piritramide, pizotifen, practolol, pramoxine, prazosin, prenylamine, prilocaine, primaquine, proadifen, procainamide, procaine, prochlorperazine, procyclidine, proheptazine, prolintane, promazine, promethazine, pronethalol, properidine, propiomazine, propranolol, prothipendyl, protriptyline, proxymetacaine, pseudoephedrine, pyrimethamine, quinidine, quinine, ranitidine, rescinamine, sotalol, tacrine, terazosin, terbutaline, terfenadine, thenyldiamine, theophylline, thiethylperazine, thiopropazate, thioproperazine, thioridazine, thiothixene, thonzylamine, timolol, tocainide, tolpropamine, tolycaine, tranlycypromine, trazodone, trifluoperazine, trifluoperidol, trimeperidine, trimeprazine, trimethobenzamide, trimethoprim, trimipramine, tripeleminamine, triprolidine, tryptamine, verapamil, xylometazoline

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## REFERENCE

Jane, I.; McKinnon, A.; Flanagan, R.J. High-performance liquid chromatographic analysis of basic drugs on silica columns using non-aqueous ionic eluents. II. Application of UV, fluorescence and electrochemical oxidation detection, *J.Chromatogr.*, **1985**, *323*, 191–225.

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## SAMPLE

**Matrix:** solutions

**Sample preparation:** Dissolve in MeOH:water 1:1 at a concentration of 50 µg/mL, inject a 10 µL aliquot.

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## HPLC VARIABLES

**Column:** 300 × 3.9 10 µm µBondapak C18

**Mobile phase:** MeOH:acetic acid:triethylamine:water 70:1.5:0.5:28

**Flow rate:** 1.5

**Injection volume:** 10

**Detector:** UV

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## CHROMATOGRAM

**Retention time:** k' 1.47

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## REFERENCE

Roos, R.W.; Lau-Cam, C.A. General reversed-phase high-performance liquid chromatographic method for the separation of drugs using triethylamine as a competing base, *J.Chromatogr.*, **1986**, *370*, 403–418.

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## SAMPLE

**Matrix:** solutions

**Sample preparation:** Prepare a 1 mg/mL solution in MeOH, inject a 5 µL aliquot.

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## HPLC VARIABLES

**Column:** 250 × 4.6 5 µm Lichrosphere cyanopropyl

**Mobile phase:** Carbon dioxide:MeOH:isopropylamine 94:6:0.03

**Column temperature:** 50

**Flow rate:** 3

**Injection volume:** 5

**Detector:** UV 254

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## CHROMATOGRAM

**Retention time:** 2.6

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## OTHER SUBSTANCES

**Simultaneous:** carphenazine, methotrimeprazine, promazine, perphenazine, chlorprothixene, deserpidine, thiothixene, reserpine

**Also analyzed:** acetophenazine, ethopropazine, promethazine, propiomazine

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## KEY WORDS

SFC; pressure 200 bar

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## REFERENCE

Berger, T.A.; Wilson, W.H. Separation of drugs by packed column supercritical fluid chromatography. 1. Phenothiazine antipsychotics, *J.Pharm.Sci.*, **1994**, *83*, 281–286.

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**SAMPLE**

**Matrix:** solutions

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**HPLC VARIABLES**

**Column:** 250 × 4.6 5 µm Supelcosil LC-DP (A) or 250 × 4 5 µm LiChrospher 100 RP-8 (B)

**Mobile phase:** MeCN:0.025% phosphoric acid:buffer 25:10:5 (A) or 60:25:15 (B) (Buffer was 9 mL concentrated phosphoric acid and 10 mL triethylamine in 900 mL water, adjust pH to 3.4 with dilute phosphoric acid, make up to 1 L.)

**Flow rate:** 0.6

**Injection volume:** 25

**Detector:** UV 229

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**CHROMATOGRAM**

**Retention time:** 17.28 (A), 8.93 (B)

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**OTHER SUBSTANCES**

**Also analyzed:** acebutolol, acepromazine, acetaminophen, acetazolamide, acetophenazine, albuterol, alprazolam, amitriptyline, amobarbital, amoxapine, antipyrine, atenolol, atropine, azatadine, baclofen, benzocaine, bromocriptine, brompheniramine, brotizolam, bupivacaine, buspirone, butabarbital, butalbital, caffeine, carbamazepine, cetirizine, chlorcyclizine, chlordiazepoxide, chlormezanone, chloroquine, chlorpheniramine, chlorpromazine, chlorpropamide, chlorprothixene, chlorthalidone, chlorzoxazone, cimetidine, cisapride, clomipramine, clonazepam, clonidine, clozapine, cocaine, codeine, colchicine, cyclizine, cyclobenzaprine, dantrolene, desipramine, diazepam, diclofenac, diflunisal, diltiazem, diphenhydramine, diphenidol, diphenoxylate, dipyrindamole, disopyramide, dobutamine, doxapram, doxepin, droperidol, encainide, ethidium bromide, ethopropazine, fenoprofen, fentanyl, flavoxate, fluoxetine, fluphenazine, flurazepam, flurbiprofen, fluvoxamine, furosemide, glutethimide, glyburide, guaifenesin, haloperidol, homatropine, hydralazine, hydrochlorothiazide, hydrocodone, hydromorphone, hydroxychloroquine, hydroxyzine, ibuprofen, imipramine, indomethacin, ketoconazole, ketoprofen, ketorolac, labetalol, levorphanol, lidocaine, loratadine, lorazepam, lovastatin, loxapine, mazine, mafenamic acid, meperidine, mephentermine, mepivacaine, mesoridazine, metaproterenol, metformin, methadone, methdilazine, methocarbamol, methotrexate, methotrimeprazine, methoxamine, methyl dopa, methylphenidate, metoclopramide, metolazone, metoprolol, metronidazole, midazolam, moclobemide, morphine, nadolol, nalbuphine, naloxone, naphazoline, naproxen, nifedipine, nizatidine, norepinephrine, nortriptyline, oxazepam, oxycodone, oxymetazoline, paroxetine, pemoline, pentazocine, pentobarbital, pentoxifylline, perphenazine, pheniramine, phenobarbital, phenol, phenolphthalein, phentolamine, phenylbutazone, phenyltoloxamine, phenytoin, pimozide, pindolol, piroxicam, pramoxine, prazepam, prazosin, probenecid, procainamide, procaine, prochlorperazine, procyclidine, promazine, promethazine, propafenone, propantheline, propiomazine, propofol, propranolol, protriptyline, quazepam, quinidine, quinine, racemethorphan, ranitidine, remoxipride, risperidone, salicylic acid, scopolamine, secobarbital, sertraline, sotalol, spironolactone, sulfinpyrazone, sulindac, temazepam, terbutaline, terfenadine, tetracaine, theophylline, thiethylperazine, thiopental, thioridazine, thiothixene, timolol, tocainide, tolbutamide, tolmetin, trazodone, triamterene, triazolam, trifluoperazine, trimeprazine, trimethoprim, trimipramine, verapamil, warfarin, xylometazoline, yohimbine, zopiclone

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**KEY WORDS**

details of plasma extraction

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**REFERENCE**

Koves, E.M. Use of high-performance liquid chromatography-diode array detection in forensic toxicology, *J. Chromatogr. A*, **1995**, 692, 103–119.

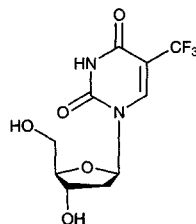
# Trifluridine

**Molecular formula:**  $C_{10}H_{11}F_3N_2O_5$

**Molecular weight:** 296.20

**CAS Registry No.:** 70-00-8

**Merck Index:** 9816



## SAMPLE

**Matrix:** aqueous humor, tissue, vitreous humor

**Sample preparation:** Minced cornea or 100  $\mu$ L aqueous humor or vitreous humor + 75  $\mu$ L 200 mM pH 3.88 sodium acetate buffer + 25  $\mu$ L 8.2  $\mu$ g/mL 3-methylthymidine in water, mix, add 1.5 mL ethyl acetate, swirl-mix for 1.5 min, centrifuge at 300 g for 5 min, repeat the extraction. Combine the organic layers and evaporate them to dryness under a stream of nitrogen, reconstitute the residue in mobile phase, inject an aliquot.

## HPLC VARIABLES

**Column:** 250  $\times$  4.6 5  $\mu$ m Ultrasphere ODS

**Mobile phase:** MeCN:10 mM pH 3.88 acetate buffer 12.5:87.5 containing 1 mM sodium hexanesulfonate

**Flow rate:** 1.3

**Injection volume:** 20

**Detector:** UV 254

## CHROMATOGRAM

**Retention time:** 5.1

**Internal standard:** 3-methylthymidine (4.1)

**Limit of detection:** 50 ng/mL

## OTHER SUBSTANCES

**Simultaneous:** bacitracin, chloramphenicol, flurbiprofen, scopolamine, sulfamethoxazole

**Noninterfering:** antazoline, atropine, cyclopentolate, dexamethasone, dipivefrin, epinephrine, epinephryl borate, erythromycin, fluorometholone, homatropine, hydrocortisone acetate, naphazoline, neomycin, phospholine, polymyxin B, procaine, proparacaine, tetracycline, timolol, tropicamide

**Interfering:** sulfacetamide

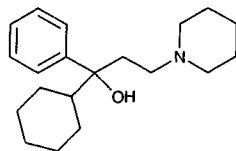
## KEY WORDS

rabbit; cornea

## REFERENCE

Riegel, M.R.; Ellis, P.P. Determination of trifluorothymidine in the eye using high-performance liquid chromatography, *J. Chromatogr.*, **1991**, 568, 467-474.

# Trihexyphenidyl



**Molecular formula:**  $C_{20}H_{31}NO$

**Molecular weight:** 301.47

**CAS Registry No.:** 144-11-6, 52-49-3 (HCl)

**Merck Index:** 9823

**Lednicer No.:** 1 47

## SAMPLE

**Matrix:** blood

**Sample preparation:** 10 mL Plasma or whole blood + 1 mL 1 M NaOH, extract twice with 10 mL hexane for 30 min. Remove the organic layers and evaporate them to dryness under a stream of nitrogen, reconstitute the residue in 1 mL 100 mM HCl, add 5 mL chloroform, vortex for 1 min, centrifuge. Remove a 4.5 mL aliquot of the organic layer and evaporate it to dryness, reconstitute the residue in 100  $\mu$ L mobile phase, inject a 50  $\mu$ L aliquot. (It is implied, but not explicitly stated in the paper, that this extraction procedure works for this compound.)

## HPLC VARIABLES

**Column:** 10  $\mu$ m Micropak CN (Varian)

**Mobile phase:** MeCN:20 mM ammonium acetate 90:10

**Flow rate:** 2.5

**Injection volume:** 50

**Detector:** UV 254

## CHROMATOGRAM

**Retention time:** 7.3

**Limit of detection:** 10 ng/mL

## OTHER SUBSTANCES

**Simultaneous:** amitriptyline, benztropine, butaperazine, carphenazine, chlorpromazine, fluphenazine, haloperidol, imipramine, mesoridazine, nortriptyline, orphenadrine, piperacetazine, promazine, promethazine, thioridazine, thiothixene, trifluoperazine, triflupromazine, trimeprazine

**Interfering:** acetophenazine

## KEY WORDS

plasma; whole blood

## REFERENCE

Curry, S.H.; Brown, E.A.; Hu, O.Y.-P.; Perrin, J.H. Liquid chromatographic assay of phenothiazine, thioxanthene and butyrophenone neuroleptics and antihistamines in blood and plasma with conventional and radial compression columns and UV and electrochemical detection, *J. Chromatogr.*, **1982**, *231*, 361-376.

## SAMPLE

**Matrix:** blood

**Sample preparation:** 1 mL Plasma + 100  $\mu$ L 200 ng/mL IS in MeOH + 1 mL 50 mM pH 10 borate buffer, vortex briefly, add to an Extrelut 3 SPE cartridge, let stand for 5 min, elute with 15 mL hexane:dichloromethane 50:50. Add the eluate to 3 mL 50 mM sulfuric acid, mix for 10 min, centrifuge at 3000 g for 10 min. Remove the aqueous layer and add it to 6 mL hexane:dichloromethane 50:50, wash for 5 min, centrifuge. Make the aqueous layer basic with 150  $\mu$ L 28% ammonia, extract twice with 3 mL hexane:dichloromethane 50:50. Combine the organic layers and evaporate them to dryness under a stream of nitrogen at 60°, reconstitute the residue in 100  $\mu$ L mobile phase, inject a 20  $\mu$ L aliquot.

## HPLC VARIABLES

**Guard column:** 30  $\times$  4.6 5  $\mu$ m Spherisorb cyano

**Column:** 250  $\times$  4.6 5  $\mu$ m Ultrasphere cyano

**Mobile phase:** MeCN:buffer 60:40 (Buffer was 50 mM  $KH_2PO_4$  adjusted to pH 6.5 with 28% ammonia.)

**Flow rate:** 1

**Injection volume:** 20

**Detector:** E, 5100 A Coulochem, 5020 guard cell 1.00 V, 5011 analytical cell, detector 1 0.55 V, detector 2 0.80 V, output of detector 2 is monitored

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#### CHROMATOGRAM

**Retention time:** 20.1

**Internal standard:** methylrisperidone (R68808) (14.3)

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#### OTHER SUBSTANCES

**Extracted:** chlorpromazine, clomipramine, cyamemazine, desipramine, droperidol, flunitrazepam, haloperidol, pipamperone, risperidone

**Noninterfering:** alprazolam, bromazepam, carbamazepine, chlorazepate, diazepam, diphenylhydantoin, estazolam, ethylbenzatropine, oxazepam, phenobarbital, triazolam, valproic acid

**Interfering:** imipramine

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#### KEY WORDS

plasma; SPE

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#### REFERENCE

Le Moing, J.P.; Edouard, S.; Levron, J.C. Determination of risperidone and 9-hydroxyrisperidone in human plasma by high-performance liquid chromatography with electrochemical detection, *J.Chromatogr.*, **1993**, 614, 333-339.

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#### SAMPLE

**Matrix:** blood, tissue

**Sample preparation:** Blood or serum. 1 mL Blood or serum + 1 µg cianopramine + 1 mL water, vortex, add 1 mL 200 mM sodium carbonate, vortex, add 6 mL hexane:1-butanol 95:5, gently agitate for 30 min, centrifuge at 2500 g for 5 min. Remove the organic layer and add it to 100 µL 0.2% phosphoric acid, agitate gently for 30 min, centrifuge for 5 min. Remove the organic layer and inject a 30 µL aliquot of the aqueous layer. Liver homogenate. 0.5 mL Liver homogenate + 10 µg cianopramine + 500 µL 2% sodium tetraborate + 8 mL hexane:1-butanol 95:5, gently agitate for 30 min, centrifuge at 2500 g for 5 min. Remove the organic layer and add it to 400 µL 0.2% phosphoric acid, agitate gently for 30 min, centrifuge for 5 min. Remove the organic layer and inject a 30 µL aliquot of the aqueous layer.

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#### HPLC VARIABLES

**Guard column:** 15 × 3.2 7 µm RP-18 Newguard (Applied Biosystems)

**Column:** 100 × 4.6 5 µm Brownlee Spheri-5 RP-18

**Mobile phase:** MeCN:100 mM NaH<sub>2</sub>PO<sub>4</sub>:diethylamine 40:57.5:2.5

**Flow rate:** 2

**Injection volume:** 30

**Detector:** UV 220

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#### CHROMATOGRAM

**Retention time:** 18.96

**Internal standard:** cianopramine (8.93)

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#### OTHER SUBSTANCES

**Simultaneous:** amitriptyline, amoxapine, benztropine, brompheniramine, chlorpheniramine, chlorpromazine, clomipramine, cyproheptadine, desipramine, diphenhydramine, dothiepin, doxepin, fluoxetine, haloperidol, imipramine, loxapine, maprotiline, meperidine, mesoridazine, methadone, metoclopramide, mianserin, moclobemide, nomifensine, nordoxepin, norfluoxetine, norpropoxyphene, northiaden, nortriptyline, pentobarbital, pheniramine, promethazine, propoxyphene, propranolol, protriptyline, quinidine, quinine, sulforidazine, thioridazine, thiothixene, tranlycypromine, trazodone, trimipramine, triprolidine

**Noninterfering:** dextromethorphan, norphetidine, phenoxybenzamine, prochlorperazine, trifluoperazine

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#### KEY WORDS

serum; whole blood; liver

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**REFERENCE**

McIntyre, I.M.; King, C.V.; Skafidis, S.; Drummer, O.H. Dual ultraviolet wavelength high-performance liquid chromatographic method for the forensic or clinical analysis of seventeen antidepressants and some selected metabolites, *J.Chromatogr.*, **1993**, 621, 215–223.

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**SAMPLE**

**Matrix:** blood, urine

**Sample preparation:** Add 1 mL whole blood or urine to Toxi-Tube A (Toxi-Lab, Irvine CA), add 3 mL water, mix by gentle inversion for 5 min, centrifuge at 1500 g for 5 min. Remove the organic layer and evaporate it to dryness under a stream of nitrogen at 40°, reconstitute the residue with 50  $\mu$ L MeCN:water 50:50, vortex for 10 s, centrifuge at 7500 g for 2 min, inject a 10 (urine) or 30 (blood)  $\mu$ L aliquot. (The detector wavelength shown is the wavelength of maximum absorbance. This will not necessarily be the optimal wavelength for the separation. Multiple wavelengths from 200–350 nm can be scanned using a diode-array detector. Otherwise, 220 nm may be a reasonable choice for initial work. Matrix may interfere.)

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**HPLC VARIABLES**

**Guard column:** 20 mm long Symmetry C18

**Column:** 250  $\times$  4.6 5  $\mu$ m Symmetry C8 (Waters)

**Mobile phase:** Gradient. A was 50 mM pH 3.8 sodium phosphate buffer. B was MeCN. A:B 85:15 for 6.5 min, 65:35 for 18.5 min, 20:80 for 3 min (step gradient), re-equilibrate at initial conditions for 7 min.

**Column temperature:** 30

**Flow rate:** 1 for 6.5 min, to 1.5 over 18.5 min, maintain at 1.5 for 3 min (re-equilibrate at 1.5 mL/min)

**Injection volume:** 10–30

**Detector:** UV 200.5

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**CHROMATOGRAM**

**Retention time:** 15.298

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**KEY WORDS**

whole blood

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**REFERENCE**

Gaillard, Y.; Pépin, G. Use of high-performance liquid chromatography with photodiode-array UV detection for the creation of a 600-compound library. Application to forensic toxicology, *J.Chromatogr.A*, **1997**, 763, 149–163.

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**SAMPLE**

**Matrix:** formulations

**Sample preparation:** Inject a 20  $\mu$ L aliquot.

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**HPLC VARIABLES**

**Column:** 250  $\times$  4 Zorbax ODS

**Mobile phase:** MeOH containing 0.5 g/L sodium acetate

**Column temperature:** 35

**Flow rate:** 1.5

**Injection volume:** 20

**Detector:** UV 228

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**CHROMATOGRAM**

**Retention time:** 3.60

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**OTHER SUBSTANCES**

**Simultaneous:** chlorpromazine, trifluoperazine

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**REFERENCE**

Pradas, T.N.V.; Sivakumar, M. HPLC quantification of a tricomponent psychiatric formulation containing chlorpromazine, trifluoperazine and trihexyphenidyl, *Pharmazie*, **1992**, 47, 231–231.



**SAMPLE****Matrix:** solutions**HPLC VARIABLES****Column:** Zorbax Rx C8**Mobile phase:** MeCN:water 60:40, pH 5.5**Flow rate:** 1.0**Detector:** UV 257**REFERENCE**

Dayan,N.; Tuitou,E. Transdermal delivery of trihexyphenidyl HCl from a novel vesicular carrier (Abstract 2302), *Pharm.Res.*, **1997**, *14*, S318.

**SAMPLE****Matrix:** solutions**HPLC VARIABLES****Column:** 250 × 4.6 Zorbax RX

**Mobile phase:** Gradient. A was 10 mL concentrated orthophosphoric acid and 7 mL triethylamine in 1 L water. B was 10 mL concentrated orthophosphoric acid and 7 mL triethylamine in 200 mL water, make up to 1 L with MeCN. A:B from 100:0 to 0:100 over 30 min, maintain at 0:100 for 5 min.

**Column temperature:** 30**Flow rate:** 2**Detector:** UV 210**OTHER SUBSTANCES**

**Also analyzed:** acepromazine, acetaminophen, acetophenazine, albuterol, aminophylline, amitrityline, amobarbital, amoxapine, amphetamine, amylocaine, antipyrine, aprobarbital, aspirin, atenolol, atropine, avermectin, barbital, benzocaine, benzoic acid, benzotropine, benzphetamine, berberine, bibucaine, bromazepam, brompheniramine, buprenorphine, buspirone, butabarbital, butacaine, butethal, caffeine, carbamazepine, carbromal, chloramphenicol, chlor-diazepoxide, chloroquine, chlorothiazide, chloroxylenol, chlorphenesin, chlorpheniramine, chlorpromazine, chlorpropamide, chlortetracycline, cimetidine, cinchonidine, cinchonine, clenbuterol, clonazepam, clonixin, clorazepate, cocaine, codeine, colchicine, cortisone, coumarin, cyclazocine, cyclobenzaprine, cyclothiazide, cyheptamide, cymarin, danazol, danthron, dapsone, debrisoquine, desipramine, dexamethasone, dextromethorphan, dextropropoxyphene, diamorphine, diazepam, diclofenac, diethylpropion, diethylstilbestrol, diflunisal, digitoxin, digoxin, diltiazem, diphenhydramine, diphenoxylate, diprenorphine, dipyrone, disulfiram, dopamine, doxapram, doxepin, dronabinol, ephedrine, epinephrine, epinine, estradiol, estriol, estrone, ethacrynic acid, ethosuximide, etonitazene, etorphine, eugenol, famotidine, fenbendazole, fen-camfamine, fenpropfen, fenproporex, fentanyl, flubendazole, flufenamic acid, flunitrazepam, 5-fluorouracil, fluoxymesterone, fluphenazine, furosemide, gentisic acid, gitoxigenin, glipizide, glunixin, glutethimide, glybenclamide, guaiaicol, halazepam, haloperidol, hydrochlorothiazide, hydrocodone, hydrocortisone, hydromorphone, hydroxyquinoline, ibogaine, ibuprofen, imino-stilbene, imipramine, indomethacin, isocarboxtyril, isocarboxazid, isoniazid, isoproterenol, isox-suprine, ivermectin, ketamine, ketoprofen, kynurenic acid, levorphanol, lidocaine, lorazepam, lormetazepam, loxapine, mazindol, mebendazole, meclizine, meclofenamic acid, medazepam, mefenamic acid, megestrol, mepacrine, meperidine, mephentermine, mephentyoin, mephesin, mephobarbital, mepivacaine, mescaline, mesoridazine, methadone, methamphetamine, meth-apyrilene, methaqualone, methazolamide, methocarbamol, methoxamine, methsuximide, methyl salicylate, methylropa, methylodopamine, methylphenidate, methylprednisolone, methyl-testosterone, methyprrylon, metoprolol, mibolerone, morphine, nadolol, nalorphine, naloxone, naltrexone, naphazoline, naproxen, nefopam, niacinamide, nicotine, niacin, nifedipine, niflumic acid, nitrazepam, norepinephrine, nortriptyline, noscapine, nyldrin, oxazepam, oxycodone, ox-ymorphone, oxyphenbutazone, oxytetracycline, papaverine, pargyline, pemoline, pentazocine, pentobarbital, persantine, phenacetin, phenazocine, phenazopyridine, phencyclidine, phendi-metrazine, phenelzine, pheniramine, phenobarbital, phenothiazine, phensuximide, phenter-mine, phenylbutazone, phenylephrine, phenylpropanolamine, piperocaine, prazepam, predni-solone, primidone, probenecid, progesterone, propiomazine, propranolol, propylparaben, pseudoephedrine, puromycin, pyrilamine, pyridylidone, quazepam, quinaldic acid, quinidine, quinine, ranitidine, recinnamine, reserpine, resorcinol, saccharin, albuterol, salicylamide, sal-icylic acid, scopolamine, scopoletin, secobarbital, strychnine, sulfacetamide, sufadiazine, sul-

fadimethoxine, sulfaethidole, sulfamerazine, sulfamethazine, sulfamethoxizole, sulfanilamide, sulfapyridine, sulfasoxizole, sulindac, tamoxifen, temazepam, testosterone, tetracaine, tetracycline, tetramisole, thebaine, theobromine, theophylline, thiabendazole, thiamine, thiamylal, thiobarbituric acid, thioridazine, thiosalicylic acid, thiothixene, thymol, tolazamide, tolazoline, tobutamide, tolmetin, tranlycypromine, triamcinolone, tribenzylamine, trichloromethiazide, trimethoprim, tripeleennamine, triprolidine, tropacocaine, tyramine, verapamil, vincamine, warfarin, yohimbine, zoxazolamine

## REFERENCE

Hill,D.W.; Kind,A.J. Reversed-phase solvent gradient HPLC retention indexes of drugs, *J.Anal.Toxicol.*, **1994**, *18*, 233-242.

# Trilostane

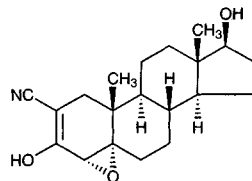
**Molecular formula:** C<sub>20</sub>H<sub>27</sub>NO<sub>3</sub>

**Molecular weight:** 329.44

**CAS Registry No.:** 13647-35-3

**Merck Index:** 9827

**Lednicer No.:** 2 158



## SAMPLE

**Matrix:** blood

**Sample preparation:** 100 µL Plasma + 200 µL 200 mM pH 4.3 acetate buffer, vortex for 1 min, add 10 mL 2.5 ng/mL ethisterone in diethyl ether, mix on a rotary shaker, centrifuge at 10000 g for 10 min. Remove the organic layer and add it to 1-2 g anhydrous magnesium sulfate, mix on a rotary shaker, centrifuge, evaporate the organic layer to dryness under reduced pressure at 35-40°, reconstitute the residue in 150 µL mobile phase, sonicate for 5 min, inject a 100 µL aliquot.

## HPLC VARIABLES

**Column:** 250 × 4.9 Spherisorb S5 ODS2

**Mobile phase:** Dioxane:pH 5.0 Sorenson's buffer 52:48 (Caution! Dioxane is a carcinogen!)

**Flow rate:** 1

**Injection volume:** 100

**Detector:** UV 255

## CHROMATOGRAM

**Retention time:** 5.6

**Internal standard:** ethisterone (12)

**Limit of detection:** 50 ng/mL

## OTHER SUBSTANCES

**Extracted:** ketotrilostane

## KEY WORDS

rat; plasma; pharmacokinetics

## REFERENCE

McGee,J.P.; Palin,K.J.; Shaw,P.N.; Potter,C. High-performance liquid chromatographic analysis of trilostane and ketotrilostane in rat plasma, *J.Chromatogr.*, **1991**, *567*, 282-287.

# Trimazosin

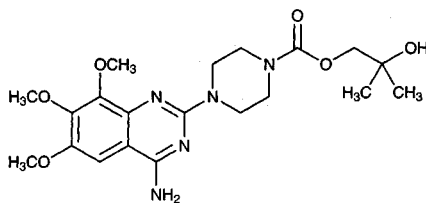
**Molecular formula:** C<sub>20</sub>H<sub>29</sub>N<sub>5</sub>O<sub>6</sub>

**Molecular weight:** 435.48

**CAS Registry No.:** 35795-16-5, 53746-46-6  
(HCl monohydrate)

**Merck Index:** 9828

**Lednicer No.:** 2 382



## SAMPLE

**Matrix:** blood

**Sample preparation:** Place 50  $\mu$ L of a 100  $\mu$ g/mL solution of doxazosin in MeOH into the bottom of a tube, evaporate to dryness under a stream of nitrogen at 37°, add 1 mL whole blood, mix thoroughly, add 5 mL diethyl ether, shake for 10 min, centrifuge at 2000 rpm for 5 min, freeze in acetone/dry ice. Remove the organic layer and add it to 100  $\mu$ L 50 mM sulfuric acid, shake for 10 min, centrifuge at 2000 rpm for 5 min, inject a 20  $\mu$ L aliquot of the aqueous layer.

## HPLC VARIABLES

**Column:** 250  $\times$  4.5  $\mu$ m Spherisorb ODS

**Mobile phase:** MeOH:water 55:45 containing 10 mM pentane sodium sulfate and 9 mM tetramethylammonium chloride, adjusted to pH 3.4 with glacial acetic acid

**Flow rate:** 1.8

**Injection volume:** 20

**Detector:** F ex 254 em 400 (cut-off filter)

## CHROMATOGRAM

**Retention time:** 5.5

**Internal standard:** doxazosin (9)

**Limit of detection:** 1 ng/mL

## OTHER SUBSTANCES

**Extracted:** metabolites

## KEY WORDS

whole blood; pharmacokinetics

## REFERENCE

Hughes, M.A.; Meredith, P.A.; Elliott, H.L. The determination of trimazosin and its metabolite CP23445 in whole blood by high performance liquid chromatography using fluorescence detection, *J. Pharmacol. Methods*, **1984**, 12, 29-34.

## SAMPLE

**Matrix:** solutions

## HPLC VARIABLES

**Column:** 125  $\times$  5  $\mu$ m Spherisorb C8

**Mobile phase:** MeCN:water 25:45 containing 5 mM dibutylamine

**Flow rate:** 2

**Detector:** F ex 346 em 340 (filter)

## REFERENCE

Ferry, D.G.; Caplan, N.B.; Cubeddu, L.X. Interaction between antidepressants and  $\alpha$  1-adrenergic receptor antagonists on the binding to  $\alpha$  1-acid glycoprotein, *J. Pharm. Sci.*, **1986**, 75, 146-149.

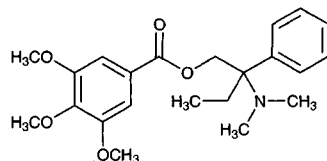
# Trimebutine

**Molecular formula:**  $C_{22}H_{29}NO_5$

**Molecular weight:** 387.48

**CAS Registry No.:** 39133-31-8, 34140-59-5 (maleate)

**Merck Index:** 9829



## SAMPLE

**Matrix:** blood, urine

**Sample preparation:** Add 1 mL whole blood or urine to Toxi-Tube A (Toxi-Lab, Irvine CA), add 3 mL water, mix by gentle inversion for 5 min, centrifuge at 1500 g for 5 min. Remove the organic layer and evaporate it to dryness under a stream of nitrogen at 40°, reconstitute the residue with 50  $\mu$ L MeCN:water 50:50, vortex for 10 s, centrifuge at 7500 g for 2 min, inject a 10 (urine) or 30 (blood)  $\mu$ L aliquot. (The detector wavelength shown is the wavelength of maximum absorbance. This will not necessarily be the optimal wavelength for the separation. Multiple wavelengths from 200-350 nm can be scanned using a diode-array detector. Otherwise, 220 nm may be a reasonable choice for initial work. Matrix may interfere.)

## HPLC VARIABLES

**Guard column:** 20 mm long Symmetry C18

**Column:** 250  $\times$  4.6 5  $\mu$ m Symmetry C8 (Waters)

**Mobile phase:** Gradient. A was 50 mM pH 3.8 sodium phosphate buffer. B was MeCN. A:B 85:15 for 6.5 min, 65:35 for 18.5 min, 20:80 for 3 min (step gradient), re-equilibrate at initial conditions for 7 min.

**Column temperature:** 30

**Flow rate:** 1 for 6.5 min, to 1.5 over 18.5 min, maintain at 1.5 for 3 min (re-equilibrate at 1.5 mL/min)

**Injection volume:** 10-30

**Detector:** UV 213.4

## CHROMATOGRAM

**Retention time:** 14.588

## KEY WORDS

whole blood

## REFERENCE

Gaillard, Y.; Pépin, G. Use of high-performance liquid chromatography with photodiode-array UV detection for the creation of a 600-compound library. Application to forensic toxicology, *J. Chromatogr. A*, **1997**, 763, 149-163.

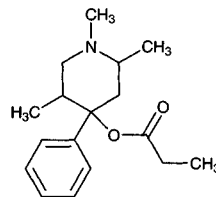
# Trimeperidine

**Molecular formula:**  $C_{17}H_{25}NO_2$

**Molecular weight:** 275.39

**CAS Registry No.:** 64-39-1

**Merck Index:** 7968



## SAMPLE

**Matrix:** solutions

**Sample preparation:** Prepare a 10  $\mu$ g/mL solution in MeOH, inject a 20  $\mu$ L aliquot.

## HPLC VARIABLES

**Column:** 125  $\times$  4.9 Spherisorb S5W silica

**Mobile phase:** MeOH containing 10 mM ammonium perchlorate and 1 mL/L 100 mM NaOH in MeOH, pH 6.7

**Flow rate:** 2

**Injection volume:** 20

**Detector:** E, LeCarbone, V25 glassy carbon electrode, + 1.2 V

## CHROMATOGRAM

**Retention time:** 2.8

## OTHER SUBSTANCES

**Also analyzed:** acebutolol, acepromazine, acetophenazine, N-acetylprocainamide, albuterol, alprenolol, amethocaine, amiodarone, amitriptyline, antazoline, atenolol, azacyclonal, bamethan, benactyzine, benperidol, benzethidine, benzocaine, benzoctamine, benzphetamine, benzquinamide, bromhexine, bromodiphenhydramine, bromperidol, brompheniramine, brompromazine, buclizine, bufotenine, bupivacaine, buprenorphine, butacaine, butethamate, chlorcyclizine, chlorpheniramine, chlorphenoxamine, chlorprenaline, chlorpromazine, chlorprothixene, cimetidine, cinchonidine, cinnarizine, clemastine, clomipramine, clonidine, cocaine, cyclazocine, cyclizine, cyclopentamine, cyproheptadine, deserpidine, desipramine, dextromoramide, dextropropoxyphene, dicyclomine, diethylcarbamazine, diethylpropion, diethylthiambutene, dihydroergotamine, dimethindene, dimethothiazine, diphenhydramine, diphenoxylate, dipipanone, diprenorphine, dipyrindamole, disopyramide, dothiepin, doxapram, doxepin, doxylamine, droperidol, ephedrine, ergocornine, ergocristine, ergocristinine, ergocryptine, ergometrine, ergosine, ergosinine, ergotamine, ethalpropazine, etorphine, etoxeridine, fenethazine, fenfluramine, fenoterol, fentanyl, flavoxate, fluopromazine, flupenthixol, fluphenazine, flurazepam, haloperidol, hydroxyzine, hyoscyne, ibogaine, imipramine, indapamine, iprindole, isothipendyl, isoxsuprine, ketanserine, laudanosine, lidocaine, lofepramine, loxapine, maprotiline, mecamlamine, meclophenoxate, meclozine, medazepam, mephentermine, mepivacaine, meptazinol, mepyramine, mesoridazine, metaraminol, methadone, methamphetamine, methapyrilene, methdilazene, methotrimeprazine, methoxamine, methoxyphenamine, methoxypromazine, methylephedrine, methylergonovine, methysergide, metoclopramide, metopimazine, metoprolol, mianserin, morazone, nadolol, nalorphine, naloxone, naphazoline, nicotine, nifedipine, nomifensine, nortriptyline, noscapine, orphenadrine, oxeladin, oxprenolol, oxymetazolin, papaverine, pargyline, pecazine, penbutolol, pentazocine, penthienate, pericyazine, perphenazine, phenadoxone, phenampromide, phenazocine, phenbutrazate, phendimetrazine, phenelzine, phenglutarimide, phenindamine, pheniramine, phenmetrazine, phenomorphan, phenoperidine, phenothiazine, phenoxybenzamine, phentolamine, phenylephrine, phenyltoloxamine, physostigmine, piminodine, pimoziide, pindolol, pipamazine, pipazethate, piperacetazine, piperidolate, pipradol, pirenzepine, piritramide, pizotifen, practolol, pramoxine, prazosin, prenylamine, prilocaine, primaquine, proadifen, procainamide, procaine, prochlorperazine, procyclidine, proheptazine, prolintane, promazine, promethazine, pronethalol, properidine, propiomazine, propranolol, prothipendyl, protriptyline, proxymetacaine, pseudoephedrine, pyrimethamine, quinidine, quinine, ranitidine, rescinnamine, sotalol, tacrine, terazosin, terbutaline, terfenadine, thenyldiamine, theophylline, thiethylperazine, thiopropazate, thioproperazine, thioridazine, thiothixene, thonzylamine, timolol, tocinide, tolpropamine, tolycaine, tranlycypromine, trazodone, trifluoperazine, trifluoperidol, trimeprazine, trimethobenzamide, trimethoprim, trimipramine, tripeleppamine, triprolidine, tryptamine, verapamil, xylometazoline

## REFERENCE

Jane, I.; McKinnon, A.; Flanagan, R. J. High-performance liquid chromatographic analysis of basic drugs on silica columns using non-aqueous ionic eluents. II. Application of UV, fluorescence and electrochemical oxidation detection, *J. Chromatogr.*, **1985**, *323*, 191–225.

# Trimeprazine

**Molecular formula:** C<sub>18</sub>H<sub>22</sub>N<sub>2</sub>S

**Molecular weight:** 298.45

**CAS Registry No.:** 84-96-8, 4330-99-8 (tartrate)

**Merck Index:** 9834

**Lednicer No.:** 1 378

